Vol. 1007 Number 2

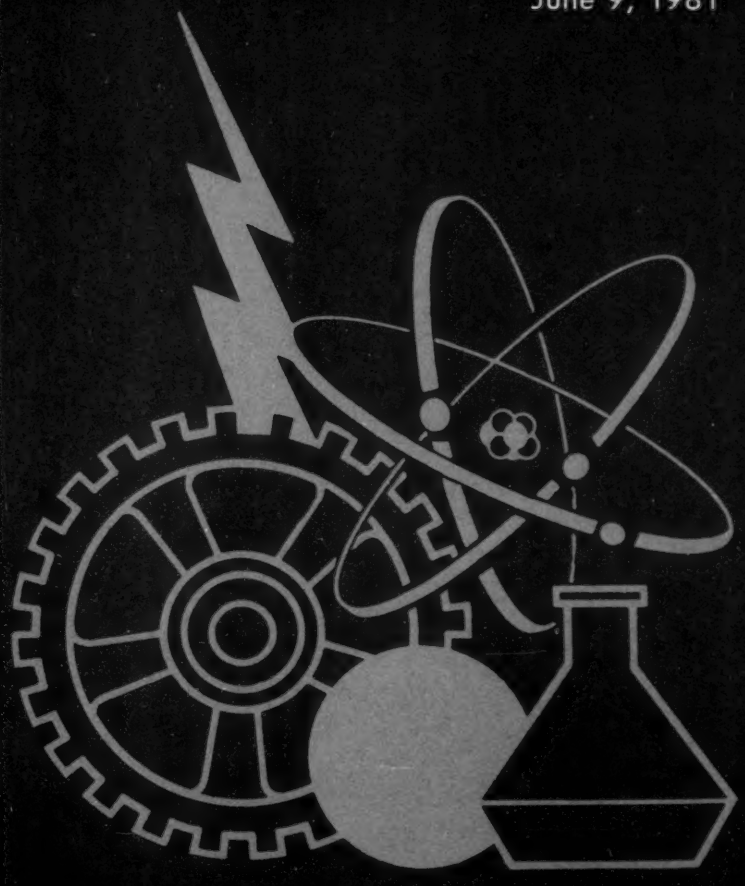
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

June 9, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 9, 1981 Volume 1007 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,451,161, Re. S.N. 216,920, Filed Dec. 16, 1980, Cl. 46/241, TOY TRACK AND VEHICLE THEREFOR, Jerome H. Lemelson, Owner of Record: *Inventor,* Attorney or Agent: Kenneth J. Stempler, Ex. Gp.: 333

4,120,529, Re. S.N. 226,504, Filed Jan. 19, 1981, Cl. 296/218, REMOVABLE ROOF PANELS FOR VEHICLES, Richard R. Chrysler, Owner of Record: *Cars & Concepts, Inc., Brighton, Mich.,* Attorney or Agent: Hugh L. Fisher, et al., Ex. Gp.: 316

4,136,501, Re. S.N. 228,773, Filed Jan. 27, 1981, Cl. 53/461, ELASTIC PLASTIC NETTING, AND PALLET LOAD WRAPPING THEREWITH, Hugh R. Connolly, Owner of Record: *Bemis Co., Inc., Minneapolis, Minn.,* Attorney or Agent: Irving Powers, et al., Ex. Gp.: 324

4,137,793, Re. S.N. 231,425, Filed Feb. 4, 1981, Cl. 74/488, THROTTLE CONTROL DEVICE FOR MOTORCYCLES AND THE LIKE, William E. Sowell, Owner of Record: *Waters and Lesniak, Grand Rapids, Mich.,* Attorney or Agent: John A. Waters, et al., Ex. Gp.: 352

4,145,527, Re. S.N. 231,679, Filed Feb. 5, 1981, Cl. 536/4, NITRO AROMATIC GLYCOSIDES, Richard C. Burns, et al., Owner of Record: *E. I. du Pont de Nemours and Co., Wilmington, Del.,* Attorney or Agent: George A. Frank, Ex. Gp.: 125

4,152,924, Re. S.N. 242,247, Filed Mar. 10, 1981, Cl. 73/40.5R, SUB-SEA EQUIPMENT TEST AND ISOLATION TOOL, John H. Mayo, Owner of Record: *Inventor,* Attorney or Agent: D. Paul Weaver, Ex. Gp.: 244

4,152,986, Re. S.N. 221,036, Filed Dec. 29, 1980, Cl. 101/463, METHOD AND APPARATUS FOR PRINTING RAISED INK IMAGES, Gilbert F. Dadowski, et al., Owner of Record: *Spirit Gravure Co., Leetsdale, Pa.,* Attorney or Agent: John K. Roedel, et al., Ex. Gp.: 337

4,157,807, Re. S.N. 221,033, Filed Dec. 29, 1980, Cl. 249/177, APERTURE FORMING DEVICES, John R. McCluskey, Owner of Record: *Inventor,* Attorney or Agent: Philip Furgang, Ex. Gp.: 147

4,165,963, Re. S.N. 226,496, Filed Jan. 19, 1981, Cl. 431/354, HOT WATER HEATER BURNER ASSEMBLY, Michio B. Nozaki, Owner of Record: *Rheem Manufacturing Co., New York, N.Y.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 345

4,198,643, Re. S.N. 246,508, Filed Mar. 23, 1981, Cl. 346/75, JET DROP PRINTER WITH ELEMENTS BALANCED ABOUT SUPPORT PLATE IN NODAL PLANE, Charles L. Cha, et al., Owner of Record: *The Mead Corp., Dayton, Ohio,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 211

4,237,863, Re. S.N. 227,510, Filed Jan. 22, 1981, Cl. 126/422, SOLAR HEATING SYSTEM, Henry Harrison, Owner of Record: *Halm Industries, Inc., Glen Head, N.Y.,* Attorney or Agent: James P. Malone, Ex. Gp.: 345

PATENT NOTICES

Certificates of Correction for the Week of June 9, 1981

Re. 30,487	4,221,260	4,241,030	4,249,323
Re. 30,491	4,222,902	4,241,048	4,249,632
Re. 30,520	4,224,334	4,241,354	4,249,962
D. 257,163	4,224,351	4,241,613	4,250,072
D. 258,174	4,224,472	4,242,464	4,250,272
4,019,039	4,224,911	4,242,476	4,250,346
4,045,176	4,227,177	4,242,555	4,250,460
4,049,678	4,228,104	4,242,929	4,250,597
4,054,674	4,228,253	4,243,426	4,250,741
4,080,262	4,228,498	4,243,441	4,251,234
4,090,115	4,229,424	4,243,616	4,251,376
4,100,355	4,231,091	4,243,633	4,251,466
4,105,710	4,231,995	4,243,669	4,251,515
4,107,191	4,232,156	4,243,758	4,251,523
4,134,879	4,233,571	4,243,828	4,251,846
4,140,783	4,234,620	4,243,903	4,252,066
4,151,260	4,234,763	4,244,203	4,252,514
4,152,425	4,235,160	4,244,251	4,252,682
4,154,116	4,235,291	4,244,280	4,252,739
4,160,801	4,235,338	4,244,791	4,252,740
4,160,925	4,235,342	4,244,838	4,252,834
4,162,331	4,235,368	4,245,063	4,252,859
4,167,589	4,235,393	4,245,214	4,253,047
4,170,825	4,235,725	4,245,245	4,253,206
4,173,993	4,236,164	4,245,337	4,253,521
4,175,509	4,236,549	4,245,827	4,253,907
4,176,236	4,236,875	4,245,861	4,254,266
4,185,511	4,237,498	4,245,988	4,254,294
4,190,873	4,237,836	4,246,276	4,254,385
4,191,411	4,237,895	4,246,315	4,254,575
4,194,602	4,238,460	4,246,563	4,254,610
4,194,932	4,238,626	4,246,746	4,255,164
4,196,216	4,238,962	4,246,848	4,255,190
4,198,662	4,239,115	4,247,390	4,255,241
4,200,551	4,239,338	4,247,403	4,255,448
4,205,431	4,239,731	4,247,519	4,255,736
4,210,777	4,239,774	4,247,825	4,256,153
4,212,120	4,240,219	4,248,694	4,256,617
4,215,928	4,240,489	4,248,700	4,257,519
4,218,845	4,240,666	4,249,190	4,257,865
4,219,813	4,240,921	4,249,243	4,258,737

Disclaimers

3,973,808.—*Roger G. Janssen,* Crookston; and *Wayne G. Schantzen,* Thief River Falls, Minn. ICE STUD FOR SNOWMOBIL TRACKS. Patent dated Aug. 10, 1976. Disclaimer filed Apr. 3, 1981, by the assignee, *James R. Musselman.*

Hereby enters this disclaimer to claims 1–36 of said patent.

3,988,586.—*Travis P. Stuart;* and *Wilbur J. Tipton,* Las Vegas, Nev. COMBINATION NEUTRON-GAMMA RAY DETECTOR. Patent dated Oct. 26, 1976. Disclaimer filed Apr. 1, 1981, by the assignee, *The United States of America as represented by the United States Energy Research and Development Administration.*

Hereby enters this disclaimer to claim 1–12 of said patent.

4,062,208.—*Anker J. Nielsen, Jr.,* Holden, Mass. LOCKING MEANS FOR GAS VALVES. Patent dated Dec. 13, 1977. Disclaimer filed Mar. 25, 1981, by the inventor.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,147,054.—*Gunter Hohenberg,* Hohengehren; and *Detlef Kurr,* Waiblingen, Germany, METHOD AND APPARATUS FOR DETERMINING THE UPPER DEAD-CENTER POSITION WITH PISTON ENGINES. Patent dated Apr. 3, 1979. Disclaimer filed Apr. 7, 1981, by the assignee, *Daimler-Benz Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1–19 of said patent.

4,212,373.—*Edgar Peter Scragg,* Florida, Transvaal Province, South Africa. DOSING A FLOWING FLUID. Patent dated July 15, 1980. Disclaimer filed Apr. 6, 1981, by the inventor.

Hereby enters this disclaimer to claims 9, 10 and 12 of said patent.

4,232,097.—*Howard R. Shanks; Albert J. Bevolo;* and *Gordon C. Danielson,* Ames, Iowa; and *Michael Francis Weber,* Wichita, Kansas. FUEL CELL OXYGEN ELECTRODE. Patent dated Nov. 4, 1980. Disclaimer filed Apr. 1, 1981, by the assignee, *The United States of America as represented by the United States Department of Energy.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

4,232,816.—*Fred J. Johnson,* Long Beach, Calif. and *Richard L. Bell,* Glenmoore, Pa. CLAMSHELL TYPE CARTON. Patent dated Nov. 11, 1980. Disclaimer filed Apr. 6, 1981, by the assignee, *Container Corp. of America.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Dedication

4,175,941.—*Costas C. Lagos,* Danvers; *Richardo A. Lanio,* Andover; *John L. Crowley,* Rowley, Mass., and *Norman A. Moreau,* Hampton, N.H. INTERNAL COATING PROCESS FOR GLASS TUBING. Patent dated Nov. 27, 1979. Dedication filed Mar. 23, 1981, by the assignee, *GTE Sylvania Inc.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Services

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

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Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure

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U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG

Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-140,049. Preparation of Calcium Cyanamide. Filed Apr. 14, 1980.

Patent application 6-142,196. Wear Reducer. Filed Apr. 21, 1980.

Patent application 6-148,890. Electromagnetic Detection Apparatus. Filed May 12, 1980.

Patent application 6-153,467. Automatic Range Containment System. Filed May 27, 1980.

Patent application 6-153,469. Dye Marker Assembly for Rocket Practice Round. Filed May 27, 1980.

Patent application 6-207,487. Phase Linear Interferometer System and Method. Filed Nov. 17, 1980.

Patent 4,028,135. Method of Cleaning Surfaces by Irradiation with Ultraviolet Light. Filed Apr. 22, 1976. Patented June 7, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6-085,662. Ram Wing Aircraft Launch Platform System. Filed Oct. 17, 1979.

Patent application 6-191,044. Method of Implementing Uniform Background Charge Subtraction in a Radiation Sensing Array. Filed Sept. 25, 1980.

Patent application 6-192,163. Small Gas Turbofan Engine with Regenerating Diffuser. Filed Sept. 30, 1980.

Patent 4,236,819. Imagery with Constant Range Lines. Filed July 29, 1974. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,239,388. Time Domain Laser Reconnaissance Technique. Filed July 29, 1974. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,240,745. Imagery with Constant Range Lines. Filed July 29, 1974. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,635. Apparatus and Method for Integrated Circuit Test Analysis. Filed Jan. 26, 1979. Patented Dec. 30, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6-212,298. Process for the Preparation of Tris(Aminomethyl)Phosphine Oxide and Its Ternary Salts. Filed Dec. 3, 1980.

Patent 4,239,390. Method of Obtaining High Resolution Light Scattering Spectra. Filed May 4, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,248,899. Protected Feeds for Ruminants. Filed Feb. 26, 1979. Patented Feb. 3, 1981. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE

National Tech. Information Service
Office of Government Inventions and Patents
Springfield, Va. 22161

Patent 4,245,169. Sampling Circuit and Method Therefor. Filed Mar. 14, 1979. Patented Jan. 13, 1981. Not available NTIS.

Patent 4,249,131. Method and Apparatus for Measuring Electrostatic Charge Density. Filed Apr. 11, 1979. Patented Feb. 3, 1981. Not available NTIS

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-202,727. Instrument for Measurement of Exposure from Laser Radiation. Filed Oct. 31, 1980.

Patent application 6-210,584. Broadband Isotropic Probe for Simultaneous Measurement of Complex E- and H-Fields. Filed Nov. 26, 1980.

Patent 4,239,755. Steroidal Cyclotriphosphazenes. Filed Jan. 28, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,247,774. Simultaneous Dual-Energy Computer Assisted Tomography. Filed June 26, 1978. Patented Jan. 27, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-127,014. Integrated Weapon Control System. Filed Mar. 4, 1980.

Patent application 6-163,001. Conjugate-Phase, Remote-Clock Synchronizer. Filed July 16, 1980.

Patent application 6-168,854. Remote Lens Focusing System for an Aerial Camera. Filed July 23, 1980.

Patent application 6-183,697. Scanning Radar System. Filed Sept. 3, 1980.

Patent application 6-186,354. A Directly Modulated Sonobuoy Transmitter Using Surface Acoustic Wave Sensor. Filed Sept. 10, 1980.

Patent application 6-195,444. System and Method for Measurement of Dynamic Angular or Linear Displacement. Filed Oct. 7, 1980.

Patent application 6-196,893. Gas Generant Propellants. Filed Oct. 14, 1980.

Patent application 6-197,736. Anti-Slosh Baffle Compartment Assembly. Filed Oct. 17, 1980.

Patent application 6-203,938. Angular Accelerometer. Filed Nov. 4, 1980.

Patent application 6-214,601. Monolithic Fully Integrated Class B Push-Pull Microwave FET. Filed Dec. 9, 1980.

Patent application 6-408,970. Site Occupancy Detector. Filed Sept. 25, 1980.

Patent 4,230,059. Noise Abating Sleeve. Filed Feb. 26, 1979. Patented Oct. 28, 1980. Not available NTIS.

Patent 4,232,314. FM Autocorrelation Fuze System. Filed Oct. 28, 1958. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,239,155. Core-Flow Rotary Jet. Filed May 30, 1979. Patented Dec. 16, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent 4,119,581. Membrane Consisting of Poly-

quaternary Amine Ion Exchange Polymer Network Interpenetrating the Chains of Thermoplastic Matrix Polymer. Filed Feb. 23, 1977. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,219,171. Device for Coupling a First Vehicle to a Second Vehicle. Filed Feb. 6, 1979. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,233,258. Method for Preparing Addition Type Polyimide Prepregs. Filed Feb. 13, 1979. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,234,258. Stark Cell Optoacoustic Detection of Constituent Gases in Sample. Filed Aug. 31, 1978. Patented Nov. 18, 1980. Not available NTIS.

Patent 4,234,715. Perfluoroalkyl Polytriazines Containing Pendent Iododifluoromethyl Groups. Filed May 8, 1979. Patented Nov. 18, 1980. Not available NTIS.

TENNESSEE VALLEY AUTHORITY

Division of Law
Muscle Shoals, AL 35660

Patent 4,239,739. Manufacture of Purified Diammonium Phosphate. Filed Nov. 6, 1979. Patented Dec. 16, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-080,725. Method for Forming Low-Resistance Ohmic Contacts on Semiconducting Oxides. Filed Oct. 1, 1979.

Patent application 6-083,484. Light Modulated Electron Beam Driven Radiofrequency Emitter. Filed Oct. 10, 1979.

Patent application 6-083,508. XeCl Avalanche Discharge Laser Employing Ar as a Diluent. Filed Oct. 10, 1979.

Patent application 6-088,223. Electron Energy Recovery System for Negative Ion Sources. Filed Oct. 25, 1979.

Patent application 6-100,664. Corneal-Shaping Electrode. Filed Dec. 5, 1979.

Patent application 6-100,665. Tissue Implantation Method and Apparatus. Filed Dec. 5, 1979.

Patent application 6-101,339. Ac Resonant Charger with Charge Rate Unrelated to Primary Power Requency. Filed Dec. 7, 1979.

Patent application 6-101,365. Energy Absorption Circuit Using a Triggered Spark GAP. Filed Dec. 11, 1979.

Patent application 6-101,367. Reflective Insulating Blinds for Windows and the Like. Filed Dec. 7, 1979.

Patent application 6-102,470. Electron Beam-Switched Discharge for Rapidly Pulsed Lasers. Filed Dec. 11, 1979.

Patent application 6-106,130. Sequenced Drive for Rotary Valves. Filed Dec. 21, 1979.

Patent application 6-106,131. Method and Apparatus for Forming Flues on Tubular Stock. Filed Dec. 21, 1979.

Patent application 6-114,446. Lanthanum-Hexaboride Carbon Composition for Use in Corrosive Hydrogen-Fluorine Environments. Filed Jan. 22, 1980.

Patent application 6-115,866. Resistive Coating for Current Conductors in Cryogenic Applications. Filed Jan. 28, 1980.

Patent application 6-119,740. Hydrogen Permeation Resistant Barrier. Filed Feb. 8, 1980.

Patent application 6-123,605. Low Pressure Pneumatic Lifter. Filed Feb. 22, 1980.

Patent application 6-123,861. Laser Cutting Apparatus for Nuclear Core Fuel Subassembly. Filed Feb. 22, 1980.

Patent 4,195,664. Surge-Damping Vacuum Valve. Filed Jan. 25, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,176. Method and Apparatus for Controlling Accidental Releases of Tritium. Filed Aug. 3, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,199,620. Method for Providing Mirror Surfaces with Protective Strippable Polymeric Film. Filed Mar. 27, 1979. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,202,700. Glassy Composition for Hermetic Seals. Filed May 2, 1979. Patented May 13, 1980. Not available NTIS.

Patent 4,202,739. Electrochemical Removal of Material from Metallic Work. Filed Apr. 25, 1977. Patented May 13, 1980. Not available NTIS.

Patent 4,204,558. Valve Assembly Having Remotely Replaceable Bearings. Filed Jan. 16, 1978. Patented May 27, 1980. Not available NTIS.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 2, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-07-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-03-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-17-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-13-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	3-26-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-11-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	12-03-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-05-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

REISSUES

JUNE 9, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

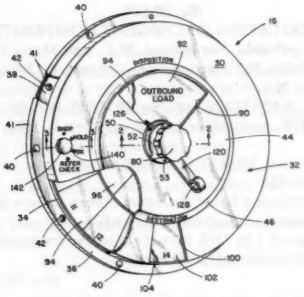
Re. 30,637
VEHICLE DISPATCH INDICATOR WITH COLOR-CODED, ALPHABETICAL AND NUMERICAL INDICIA

John H. King, 6801 S. Pulaski Rd., Chicago, Ill. 60629, and William C. Gore, P.O. Box 821, Elgin, Ill. 60120

Original No. 3,996,681, dated Dec. 14, 1976, Ser. No. 495,646, Aug. 8, 1974. Application for reissue Sep. 21, 1979, Ser. No. 77,605

Int. Cl.³ G09F *11/04, 21/04*

U.S. Cl. 40—495 **6 Claims**



1. A dispatch indicator designed for application to a vehicle or other merchandise-enclosing container and adapted to *assume an upright position on the vehicle and* render shipping instructions, said indicator comprising a housing having a rear wall, a front wall and an interconnecting continuous side wall, said front wall being provided with a central hub, a *horizontal* shaft mounted in said hub for rotation and also limited axial sliding movement endwise therethrough, said front wall being provided with a first viewing opening in the peripheral region thereof and with a second viewing opening in the medial portion thereof at a region displaced radially inwardly of the first viewing opening, a relatively large diameter circular rear dial plate coaxial with said shaft and *having a centrally disposed opening* through which the [latter] *shaft* loosely projects, a relatively small diameter circular front dial plate coaxial with said shaft and *having a centrally disposed opening* through which the [latter] *shaft* loosely projects, said large diameter *rear* dial *plate* presenting indicia sectors which are visible through said first viewing opening, said small diameter *front* dial *plate* presenting indicia sectors which are visible through said second viewing opening, spring means interposed between said *front and rear* dial plates *and serving* yieldingly [biasing] *to bias* the same apart, a fixed front reaction plate carried by said front wall for assimilating [the rearward] thrust of said front dial plate *in the direction of said front wall*, a fixed rear reaction plate carried by said rear wall for assimilating [the forward] thrust of the rear dial plate *in the direction of said rear wall*, each [reaction] *dial* plate being formed *in the central portion thereof* with a plurality of radially extending clutch recesses therein, a radially projecting clutch finger mounted on said shaft and designed for selective cooperation with said recesses depending upon the axial position of said shaft, means for yieldingly biasing said shaft to a medial position wherein said clutch finger is out of effective engagement with said dial plates, a circular row of detent depressions and a series of fixed cooperating detent protuberances effective between each dial plate and its associated fixed reaction plate to restrain rotational movement of such plate when an indicia sector thereon is in register with its associated viewing opening, and a control knob mounted on the forward end of said shaft exteriorly of the housing *and adapted for use in rotating and axially shifting said shaft.*

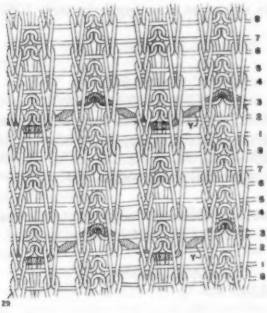
Re. 30,638
MULTI-GAUGE KNIT FABRIC WITH FLEECE INLAY YARN

David J. J. Bryars, Leicestershire, England, assignor to Austen Bryars of London, Inc., Greensboro, N.C.

Original No. 4,125,001, dated Nov. 14, 1978, Ser. No. 826,059, Aug. 19, 1977. Division of Ser. No. 640,945, Dec. 5, 1975, Pat. No. 4,043,152. Application for reissue Nov. 14, 1979, Ser. No. 94,170

Int. Cl.³ D04B *1/04*

U.S. Cl. 66—191 **2 Claims**



1. A double knit fabric comprising cylinder and dial wales formed from a fine denier body yarn *on a machine with two needle beds* and including a relatively heavy denier inlay yarn confined by body yarn stitches to only one surface of the fabric wherein said inlay yarn is interengaged with stitches of said body yarn only on alternate wales of the same course *defined by one needle bed* and on [consecutive] *non-consecutive* courses of the same wale and wherein every fourth consecutive cylinder and dial wale is non-knit *being defined by the deactivation of selected needles in one of said needle beds.*

Re. 30,639
PROCESS AND DEVICE FOR BENDING ELONGATED ARTICLES

Marinus J. Hofstede, Berkel; Leonardus J. C. Hermans, and Jan W. de Koe, both of Dordrecht, all of Netherlands, assignors to Cojafex B.V., Netherlands

Original No. 4,151,732, dated May 1, 1979, Ser. No. 829,403, Aug. 31, 1977. Application for reissue Feb. 1, 1980, Ser. No. 117,779

Claims priority, application Netherlands, Sep. 3, 1976, 7609864

Int. Cl.³ B21D *7/16*

U.S. Cl. 72—8 **9 Claims**

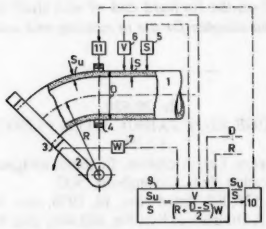
1. A process for bending elongated articles such as pipes comprising the steps of

leading the article progressively past a heating device heating a narrow annular band of said article in a heating pattern, in which band the bending is effected,

controlling the thickness of a wall portion lying at the outside of the bend including the steps of

measuring the longitudinal speed of said wall portion before it reaches the heating device,

measuring the longitudinal speed of said wall portion after it passes the heating device, and



adjusting the distribution of the temperature over the heated annular band by changing the heating pattern in dependance on the relation between said two speeds to produce a thickness of the said wall portion after bending which is reduced by not more than approximately 10% of its original value.

Re. 30,640

VEHICLE LIFTING JACK

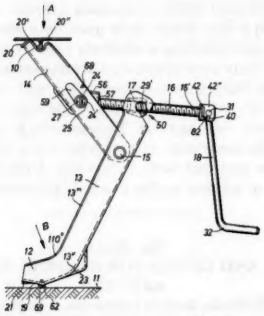
Friedrich Keilholz, Ennepetal, Fed. Rep. of Germany, assignor to Firma August Bilstein, Ennepetal, Fed. Rep. of Germany

Original No. 3,989,225, dated Nov. 2, 1976, Ser. No. 584,419, Jun. 6, 1975. Application for reissue Dec. 12, 1978, Ser. No. 968,848

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1974, 2427443; Aug. 12, 1974, 2438643; Mar. 10, 1975, 7504739[U]

Int. Cl.[3] **B66F** *3/12*

U.S. Cl. 254—126 **6 Claims**



1. A vehicle jack comprising:

a leg formed with a straight shank having an upper end, a foot angled from and formed on a lower end of said [shanks] *shank*, a nonslip rib on the underside of said foot extending substantially over the entire width thereof, said foot having an extended locating surface extending forwardly of said rib and provided with projections, and a contact surface rearwardly of said rib *and rigid with said foot*, the upper end of said leg being formed with a notch *and being free from any ground-engaging support between said foot and said notch, said contact surface being at least twice as long as said locating surface;*

an elongated carrier arm having one end pivotally connected to said shank and another end [another end] formed with a vehicle-engaging head;

a nut pivotally mounted in said notch at said upper end of said leg;

a [thread] *threaded* elongated spindle received in said nut at an intermediate portion along its length;

a thrust bearing pivotally mounted on said arm at an intermediate location between the ends thereof and engaging one end of said spindle; and

a crank on the other end of said spindle for rotating same to thread said spindle along said nut and raise and lower said head *said nut being formed with a pair of oppositely extending journal pins, said leg being of U-cross section having side limbs formed with slots constituting said notch, said pins being received in said slots, said thrust bearing comprising a roller bearing and a counterbearing ring, receiving said roller bearing, said arm being of U-cross section and having side limbs formed with slots receiving pins of said counterbearing ring.*

Re. 30,641

LOW IRRITATING DETERGENT COMPOSITIONS

Robert J. Verdicchio, Succasunna, N.J., and Maria C. Rodon, New Rochelle, N.Y., assignors to Johnson & Johnson, New Brunswick, N.J.

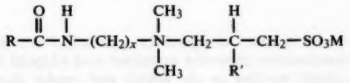
Original No. 4,186,113, dated Jan. 29, 1980, Ser. No. 892,803, Apr. 3, 1978. Application for reissue May 5, 1980, Ser. No. 146,982

Int. Cl.[3] **C11D** *1/92, 1/94*

U.S. Cl. 252—526 **7 Claims**

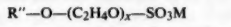
1. A low irritating liquid detergent composition wherein the active ingredients consist essentially of:

(a) from about 1 to 15% by weight of the total composition of a sulfobetaine of the formula



wherein R is an alkyl group of from 8 to 18 carbon atoms or mixtures thereof, R′ is OH or H, x is an integer from 1 to 3 and M is selected from the group consisting of alkali metals, alkaline earth metals and alkanol amine salts selected from the group consisting of mono-, di- and triethanolamine salts; and

(b) from about 1 to 15% by weight of the total composition of an anionic detergent of the formula



wherein R″ is a branched or straight chain saturated or unsaturated hydrocarbon radical, alkylaromatic hydrocarbon radical or alkylaryl hydrocarbon radical containing from 6 to 20 carbon atoms, x is an integer from 1 to 5 and M is selected from the group consisting of alkali metals, alkaline earth metals and alkanol amine salts;

wherein the total of (a) and (b) does not exceed about 20% by weight of the total composition.

Re. 30,642

PROCESS FOR PREPARING MOLYBDENUM ACID SALTS

Mitchell Becker, Teaneck, N.J., assignor to Halcon Research & Development Corp., New York, N.Y.

Original No. 3,578,690, dated May 11, 1971, Ser. No. 740,975, Jun. 28, 1968. Application for reissue Jan. 23, 1980, Ser. No. 114,772

Int. Cl.[3] **C08H** *17/36*

U.S. Cl. 260—414 **9 Claims**

1. In a process for preparing a molybdenum carboxylate the improvement which comprises [intimately contacting] *directly reacting* a molybdenum oxide, [molybdenum halide,] alkali molybdate, alkali earth molybdate, ammonium molybdate, or a mixture of a molybdenum oxide, [molybdenum

halide,] alkali molybdate or alkali earth molybdate and ammonia; with a monocarboxylic acid, at temperatures in the range of 100° to 300° C. while removing water.

Re. 30,643

METHOD OF ALUMINIZING THE INSIDE OF THE PANEL OF A TELEVISION PICTURE TUBE

Eberhard Nill, Esslingen, and Peter Schmidt, Denkendorf, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Original No. 4,022,929, dated May 10, 1977, Ser. No. 620,098, Oct. 6, 1975. Application for reissue Feb. 25, 1980, Ser. No. 124,005

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1974, 2450834

Int. Cl.[3] **H01J** *29/28;* **C23C** *13/02*

U.S. Cl. 427—69 **1 Claim**

7. In a method of aluminizing the inside of the panel of a television picture tube wherein a lacquer forms an intermediate layer between the layer of fluorescent material and the layer of aluminum as applied thereafter by way of evaporation, the steps of applying the coat of lacquer onto the layer of fluorescent material and onto the lateral surfaces of the panel not covered by fluorescent material, drying said coat of lacquer, spraying boric acid onto said coat of lacquer and drying said boric acid, thereby roughening said coat of lacquer on the layer of fluorescent material and within the area of the lateral surfaces of the panel sufficiently to prevent the formation of blisters in the subsequently applied layer of aluminum caused by vaporization of said coat of lacquer when subsequently heated.

Re. 30,644

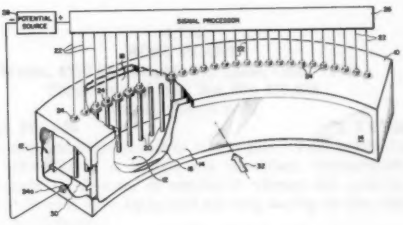
X-RAY DETECTOR

Nathan R. Whetten, Burnt Hills, and John M. Houston, Schenectady, both of N.Y., assignors to General Electric Company, Milwaukee, Wis.

Original No. 4,031,396, dated Jun. 21, 1977, Ser. No. 616,930, Sep. 26, 1975. Continuation-in-part of Ser. No. 554,171, Feb. 28, 1975, abandoned. Application for reissue Apr. 26, 1979, Ser. No. 33,794

Int. Cl.[3] **G01T** *1/18*

U.S. Cl. 250—385 **34 Claims**



20. An x-ray detector for detecting radiation from an x-ray source, comprising:

a gaseous medium of the type characterized as being substantially opaque to electromagnetic radiation at x-ray frequencies;

a plurality of substantially planar sheet anodes, comprising material which is characterized as being substantially opaque to electromagnetic radiation at x-ray frequencies, disposed in said gaseous medium;

a plurality of substantially planar sheet cathodes, comprising material which is characterized as being substantially opaque to electromagnetic radiation at x-ray frequencies, disposed in said gaseous medium, each of said cathodes lying approximately equi-distant between two of said anodes;

said planar sheet anodes and said planar sheet cathodes disposed substantially parallel to the direction of impingement of any radiation from the x-ray source;

means for applying direct current electric potential between said cathodes and said anodes;

means for separately measuring the electric current flow from each of said anodes connected in series between said anodes and means for applying said potential.

PLANT PATENTS

GRANTED JUNE 9, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,735
ROSE PLANT
O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710
Filed May 16, 1980, Ser. No. 150,624
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by salmon colored flowers developed from buds which appear bicolored and which mature into attractive open blooms with soft apricot toned centers and lighter salmon-toned outer petals.

4,736
ROSE PLANT
O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710
Filed May 16, 1980, Ser. No. 151,474
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by multi-orange toned flowers developing into open blooms of more general carrot red tonality borne primarily singly to a stem and which are long lasting on the plant and as cut flowers.

4,737
ROSE PLANT
O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710
Filed May 16, 1980, Ser. No. 150,632
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described characterized particularly by bicolor cardinal red and pale pink coloring and high centered flowers borne primarily singly to a stem, and are attractive on the plant and as cut flowers.

4,738
ROSE PLANT
O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710
Filed May 16, 1980, Ser. No. 150,633
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by flowers of persistent vibrant red coloring which hold well upon aging and are long lasting on the plant and as cut flowers.

4,739
ALMOND TREE
Leonard D. James, 4017 Tully Rd., Modesto, Calif. 95350, assignor to Leonard D. James and Uldine S. James, both of Modesto, Calif.
Filed May 30, 1980, Ser. No. 155,833
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized, in comparison to the Ne Plus Ultra, by a tree of greater height, having open, strong, vigorous, upright growth and a diverging branch pattern; by heavy blooming, with pink flowers, about a week later; and by the regular and heavy bearing of large, well-sealed, more symmetrical nuts in harvest two to three weeks earlier.

4,740
APPLE TREE—N.J. 49 CULTIVAR
Catherine H. Bailey, Englishtown, and L. Fredric Hough, Bloomsbury, both of N.J., assignors to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.
Filed Feb. 28, 1980, Ser. No. 125,578
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as illustrated and described, characterized by its general similarity to the pollen parent Mollies Delicious cultivar, but being distinct therefrom by the ability to form fruit which (1) ripens substantially earlier, (2) is of a more uniform size, and (3) is of a more attractive bright red appearance.

PATENTS

GRANTED JUN. 9, 1981

ERRATA

For CLASS	See PATENT NO.
434–289	4,271,604
037–195	4,271,617
040–112	4,271,626
738–064.63	4,271,704
411–020	4,271,747
440–113	4,271,781
157–001	4,271,884
223–015	4,272,011
493–418	4,272,066
369–077	4,272,083
283–001 B	4,272,327
202–154	4,272,344
564–503	4,272,455
570–186	4,272,456
427–047	4,272,510
423–415 A	4,272,555
369–112	4,272,651
369–139	4,272,652
528–288	4,272,725
335–213	4,272,727
365–190	4,272,811
363–129	4,272,814
365–012	4,272,817

PATENTS

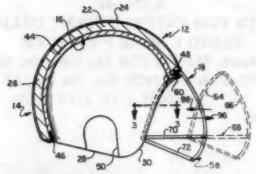
GRANTED JUNE 9, 1981

GENERAL AND MECHANICAL

4,271,537
PROTECTIVE HELMET WITH RELEASABLE FACE GUARD APPARATUS

Burton R. Bowlus, El Dorado, and Gerald L. McKinney, Newton, both of Kans., assignors to Wichita Pro-Tech Inc., Newton, Kans.

Filed May 14, 1979, Ser. No. 38,652
Int. Cl.[3] **A42B** *1/08*
U.S. Cl. 2—424 **10 Claims**



1. A protective helmet apparatus usable as a football helmet or the like to be worn by a person, comprising:

(a) a basic helmet assembly including a main helmet body;

(b) said main helmet body having a contoured shell member to conform to the general outline of a person's head;

(c) said shell member constructed of a continuous, thick, rigid foam material without any openings thereto except for the person's neck and face portions;

(d) a face guard assembly having a face shield member releasably mounted in a resilient connector assembly which, in turn,, is mounted in said shell member;

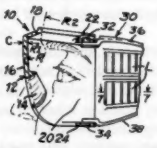
(e) said face shield member includes a main connector section of generally U-shape and fits into said resilient connector section which is also of generally U-shape mounted in said shell member about said opening for the person's face portion; and

(f) said face shield member is released from said connector assembly on a predetermined outward pulling force thereon as a safety factor to the person wearing same.

4,271,538
SAFETY SPECTACLES

Edward N. Montesi, Barrington, and John H. King, Coventry, both of R.I., assignors to Norton Company, Worcester, Mass.

Filed Mar. 24, 1980, Ser. No. 133,366
Int. Cl.[3] **A61F** *9/02*
U.S. Cl. 2—439 **15 Claims**



1. Safety spectacles comprising:

a single face piece including a continuous wall with an outer convex surface extending between opposite ends thereof molded of relatively tough fracture resistant plastic material adapted to protect a wearers eyes, extend in front of, around and beyond the eyes to opposite side temples of the wearer and inwardly toward facial portions adjacent the eyes and having

a transparent front wall portion including

right and left viewing zones, and a wall thickness that varies continuously in all directions across the viewing zones from a point situated in a plane between the viewing zones,

a nose piece portion including a notch between the right and left viewing zones, opposite temple side portions each having

a sidewall portion with an outer convex surface extending from the front wall portion to an opposite end of the face piece and a lower flange portion extending inwardly from the side wall to an inner surface thereof,

a continuous upper flange portion extending inwardly from the front and opposite temple side wall portions to an inner surface thereof and adapted to wrap around the wearers forehead to the temples,

temple bars pivotally hinged to the opposite temple side portions and each having

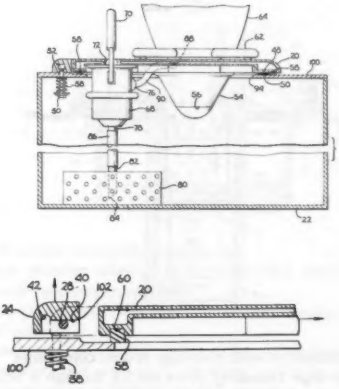
a forward sidewall portion including an outer convex surface extending from a forward edge thereof adapted to abut an opposite end surface of the face piece to a rear side wall portion adapted for engaging a side portion of the wearers head adjacent an ear and

upper and lower flange portions extending inwardly from the forward sidewall portion of the temple bar to an inner surface thereof whereby the upper and lower flanges and the forward side wall portion including the outer convex surface of the temple bars constitute extensions of the upper and lower flanges and the side wall portion including the convex surface of the opposite temple side portions of the face piece.

4,271,539
QUICK-CHANGE TOILET SYSTEM

George C. Roberts, Los Angeles, Calif., assignor to Inca-One Corporation, Los Angeles, Calif.

Filed Mar. 1, 1979, Ser. No. 16,551
Int. Cl.[3] **E03D** *1/00, 5/016;* **E05D** *7/10;* **B65D** *43/12*
U.S. Cl. 4—300 **8 Claims**



1. A convertible toilet comprising:

a waste holding tank;

a frame member disposed over said waste holding tank;

a toilet cover, said toilet cover having an opening therethrough; and

fastening means on said frame member and on said toilet cover, said fastening means being a means for manually fastening said cover to said frame member when a first

force is applied to said cover in a first direction and manually unfastening said cover from said frame member when a second force is applied to said cover in a second direction;

said fastening means comprising:

a locking bar on said frame member;

a slot in an edge of said cover for receiving said locking bar;

a pair of opposing locking pins on said cover projecting into said slot;

said locking bar defining a pair of channels for receiving said locking pins and an indentation in a surface of each channel for mating with said locking pins; and

a resilient coupling means on said locking bar and on said frame member for coupling said locking bar to said frame member with said resilient coupling means biasing said locking bar to a locking position while permitting said locking bar to be displaced from said locking position when a force is applied to said locking bar;

said resilient coupling means comprising:

at least one boss attached to said locking bar which extends downwardly through an opening in said frame member;

a stop member on said boss below said frame member; and

a resilient member disposed between said frame member and said stop member;

and wherein said toilet further comprises:

a seal mounted on the lower surface of said toilet cover and extending around the periphery of said cover;

a first fastening strip mounted on the lower surface of said cover; and

a second fastening strip mounted on the upper surface of said frame member adjacent said first fastening strip;

whereby when said cover is closed, said first and second fastening strips engage, thereby latching said cover in place, and whereby said seal engages the surface of said frame member.

4,271,540

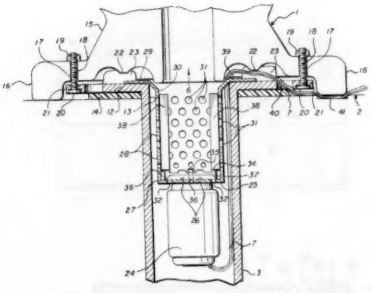
SEWAGE SYSTEM WITH COMMINUTOR

Ronald M. Clifton, Rte. 2, Box 2030, Porter, Tex. 77365

Filed Apr. 26, 1979, Ser. No. 33,444

Int. Cl.[3] **E03D** *9/10;* **B02C** *13/00*

U.S. Cl. 4—319 **8 Claims**



1. In combination with a sewage system comprising

a sewage pipe extending downwardly through a floor for connection to a sewer or septic tank,

said sewage pipe including an outwardly extending flange at the floor,

a toilet bowl supported on said floor over said sewage pipe and having a supporting base fitting over said outwardly extending flange, and

a sealing gasket providing a peripheral seal between said supporting base of said toilet and said outwardly extending sewage pipe flange;

an electrically powered grinding apparatus for comminuting the effluent from said toilet, including a rotary grinder and submersible electric motor therefor,

said grinding apparatus, including said grinder and said submersible electric motor, being positioned inside said sewage pipe and removably supported therein at said outwardly extending sewage pipe flange, said grinder includes a hollow housing having a plurality of openings for discharge of comminuted effluent, said housing having a peripheral flange positioned between said outwardly extending sewage pipe flange and the supporting base of said toilet and supports said apparatus in said sewage pipe to receive all the effluent from said toilet.

4,271,541

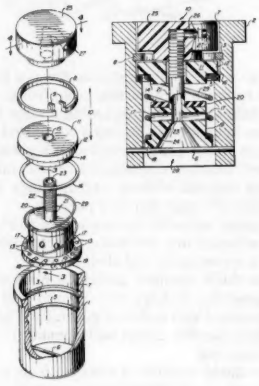
APPARATUS FOR INTERMITTENT DELIVERY OF FLUID UNDER PRESSURE

Lester R. Mathews, 9810 N. 37th St., Phoenix, Ariz. 85028

Filed Oct. 4, 1979, Ser. No. 82,182

Int. Cl.[3] **E04H** *3/16, 3/18, 3/20*

U.S. Cl. 4—490 **16 Claims**



1. Apparatus for intermittent delivery of a fluid under pressure from a source thereof comprising:

a. a hollow cylindrical housing;

b. a cylindrical plunger disposed within said housing comprising:

(1) a body;

(2) means defining a delivery head at one end of said body; and

(3) means defining a piston at the other end of said body;

c. means defining an axial fluid conduit communicating between the two ends of said body and defining an intake orifice in said piston end and a delivery orifice adapted to direct a flow of fluid under pressure in a selected direction from said head;

d. means for reciprocating and incrementally rotating said plunger body within said housing between a ready position wherein said head is flush with an end of said housing and a fluid delivery position wherein said head is extended out of said housing, comprising:

(1) means for simultaneously rotating and axially advancing said body responsive to pressure from said source of fluid comprising at least one rotator bore disposed in said body at an angle to the direction of flow of the fluid whereby the fluid pressure will rotate said plunger;

(2) means for limiting the length of the axial and rotary travel of said body between a ready position and a delivery position; and

(3) means for returning said body to said ready position; and

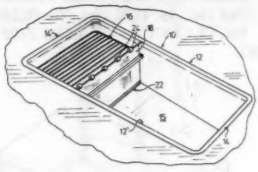
e. means for connecting said intake orifice with a source of fluid under pressure.

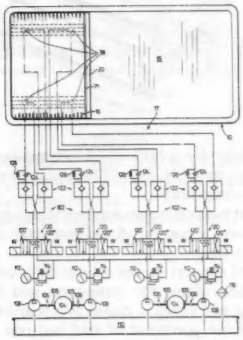
4,271,542

SWIMMING POOL PLATFORM AND COMPONENTS

Charles Wood, Mississauga, and Richard Fralick, Bramalea, both of Canada, assignors to DAF Indal Ltd., Mississauga, Canada

Filed Jan. 15, 1979, Ser. No. 3,218
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—495 **43 Claims**





1. For use in a swimming pool containing water, a vertically adjustable pool platform, means to vertically raise and means to vertically lower said platform, and means connecting the pool platform to the means to vertically raise and means to vertically lower, said platform, said pool platform being rigid, buoyant and having openings therethrough so as to float on the surface of the water, and so as to be constantly urged to float to the surface when submerged under water at a predetermined level and which platform is capable of supporting people standing therein when secured for use and permits the vertical passage of water therethrough.

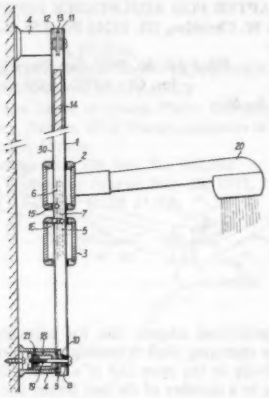
4,271,543

SHOWER BAR WITH SLIDING SPRAY HEAD

Jean Martin, La Barriere, France, assignor to Valentin S.A., Bourseville, France

Filed Nov. 20, 1979, Ser. No. 96,132
Claims priority, application France, Dec. 27, 1978, 78 36426
Int. Cl.³ A47K *3/22;* B05B *15/06*
U.S. Cl. 4—615 **12 Claims**

1. An adjustable shower spray head device comprising:
a bar, means for mounting said bar generally vertically to a surface,
a first set of pulleys rotatably mounted at one end of said bar and a second set of pulleys rotatably mounted at the other end of said bar, a pair of pulleys of one of said first and second sets connected to rotate together, and at least one pulley of the other set rotating independently,
a first chain passing over one pulley of the connected pair of said one set and the independently rotatable pulley of the other set, and a second chain passing over the other pulley of the connected pair of said one set and a pulley of said other set,
a spray head having a fluid passage slidably mounted on said bar and connected to one of said first and second chains,
a grip means slidably mounted on said bar and connected to



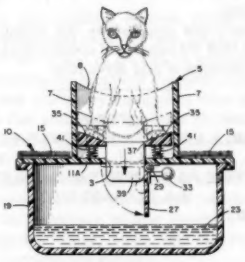
the other of said first and second chains, movement of said grip means moving said other chain and thereby rotating said connected pair of pulleys resulting in the movement of said one chain with the spray head connected thereto.

4,271,544

ANIMAL COMMODE

Larry R. Hammond, 4053 Wallace St., Apt. #1, Riverside, Calif. 92509

Filed Nov. 13, 1978, Ser. No. 959,609
Int. Cl.³ A01K *1/01*
U.S. Cl. 4—661 **19 Claims**



1. An animal commode comprising:
a base member adapted to be removably mounted on a waste-receiving receptacle;
an opening in said base member communicating with said receptacle;
an enclosure open at the top integrally mounted on said base member, said enclosure extending upwardly from said base member and enclosing said opening;
a floor member sloped to the edge of said opening;
generally flat platform extensions integrally connected to said base member and extending laterally outwardly therefrom and from said upwardly extending enclosure to an extent to provide a step for the animal; and
material of the type cats like to scratch covering said platform extensions exterior to said enclosure, whereby the usual scratching by the animal, after excreting, takes place on the flat platform extensions outside the enclosure,

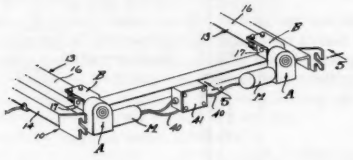
rather than inside the enclosure, to thereby enhance the sanitary conditions of the commode.

4,271,545

ADAPTER FOR ADJUSTABLE HOSPITAL BEDS

Fredrick W. Christian, III, 11242 Pearl St., Los Angeles, Calif. 90064

Filed Jul. 30, 1979, Ser. No. 61,891
Int. Cl.³ A47C *21/00*
U.S. Cl. 5—66 **14 Claims**



1. A motorized adapter unit for adjustable hospital beds having an operating shaft extending concentrically within and coextensively to the open end of a cover tube with a swivel mounting to a member of the bed frame, and including;

a bracket extending over the open end of the cover tube and embracing the swivel mounting to said member of the bed frame, with clamp means anchoring the bracket to the cover tube at the side of the mounting remote from the open end of the cover tube,

a housing carried by the bracket and open to receive the end portion of the cover tube through bearing means concentric with said cover tube,

a drive tube journaled in said bearing means in telescopic engagement over the end portion of the cover tube, and having an end wall carrying a sleeve concentric therewith and entering into the cover tube and with coupling means driveably engaging the operating shaft,

a motor and gear drive carried by and revolving the drive tube within the housing,

a timing gear and cam means driven by the drive tube within the housing,

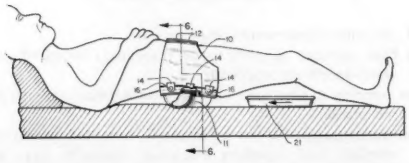
and limit switches actuated by the timing gear and cam means to limit the number of counterclockwise and clockwise revolutions of said drive tube.

4,271,546

INFLATABLE LIFT FOR PATIENT'S BEDPAN USE

Mary Martin, 710 W. Third St., Aspen, Colo. 81611

Filed Jul. 24, 1979, Ser. No. 60,171
Int. Cl.³ A61G *9/00*
U.S. Cl. 5—90 **6 Claims**



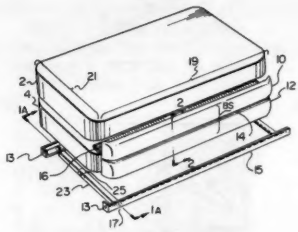
1. A lifting device for patients reclining in bed comprising a flexible belt-like strip adapted to be wrapped around the lower portion of a patient's torso with its ends attached to each other so as to be worn by the patient during a sojourn in bed, an inflatable member of flexible impervious material mounted on said belt-like strip in a position adjacent the base of the patient's spine, means for attaching said inflatable member to said belt-like strip comprising elastic connecting strips which will yield during inflation of said inflatable member and restore the inflatable member to flat condition when deflated, means connecting said inflatable member to a source of fluid under pressure and means permitting the injection of such fluid into the inflatable member to lift the patient to permit such fluid to be exhausted to lower the patient onto the surface of the bed.

4,271,547

MATTRESS AND BOXSPRING EXTENDER

Aldo Grossutti, c/o Algro Investigations Inc., P.O. Box 4704, Vancouver, British Columbia, Canada V6B 4A4

Filed Oct. 18, 1979, Ser. No. 86,241
Int. Cl.³ A47C *19/00*; A61G *7/02*
U.S. Cl. 5—181 **11 Claims**



1. An extender for a bed which comprises a boxspring, a mattress resting squarely on said boxspring, and a bed frame, said extender comprising:

(a) elongated cushion means for providing extended sleeping area adjacent a portion of the perimeter of said mattress and boxspring;

(b) elongated support means substantially coextensive with said cushion means for resting on said bed frame and supporting said cushion means in a position adjacent said portion of the perimeter of said mattress and boxspring such that said extended sleeping area is provided by said cushion means;

(c) means connecting said cushion means and said support means for restraining relative movement therebetween; and,

(d) tongue means for projecting horizontally between said mattress and boxspring from said inward side of the extender and assisting to hold the inward side of said extender flushly against said mattress and boxspring,

said cushion means and said support means each having in inward side and an outward side, said inward sides together forming an inward side of the extender, said outward sides together forming an outward side of the extender.

4,271,548

MOTORBOAT TRANSOM PROTECTOR

Terrance M. Alberts, 1919 N. Clinton, Saginaw, Mich. 48602

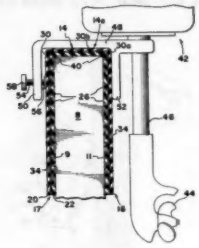
Filed Dec. 27, 1978, Ser. No. 973,698
Int. Cl.³ B63B *17/00*
U.S. Cl. 9—1.5 **12 Claims**

1. A guard for protecting a motor boat transom having first and second generally upstanding, faces spaced by a top surface said guard comprising:

a one-piece pliable sheet of material having opposite end sheet sections for bearing against said first and second faces of said transom, and an intermediate sheet section, joined to said end section, urging said end sections to inoperative positions in which they lie in the same plane, but permitting movement thereof to confronting positions adapted to bear against said first and second faces of said transom;

one of said end sections of said sheet including a terminal end sheet portion of predetermined thickness and another sheet portion adjacent said intermediate sheet section of a greater predetermined thickness; and

deformable stay means, spanning said end sheet sections and said intermediate sheet section, deformable with said end sheet sections from said inoperative positions to deformed confronting positions in which said deformable stay means sets and inhibits return movement of said end sheet sections to said inoperative positions;



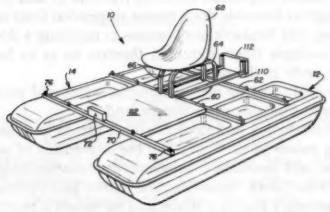
said end sheet sections including a plurality of inwardly projecting ribs thereon for bearing against said transom to inhibit movement of said end sheet sections relative to said transom.

4,271,549

CONNECTION MEANS FOR A KNOCK-DOWN BOAT

Roy L. Chandler, Arlington, Tex., assignor to Advanced Marine Concepts, Inc., Arlington, Tex.

Filed Jan. 12, 1979, Ser. No. 2,877
Int. Cl.[3] B63B *7/00*
U.S. Cl. 9—2 S **6 Claims**



1. Attachment means for a knock-down boat, comprising

(a) an elongated structural member having a pair of relatively short slots in one of its sides, and each of said slots being in open communication with the opposite side of the structural member;

(b) a pair of second structural members positioned internally of a floatation member of the boat and each being adapted to be bolted to the first structural member, and there being an internally threaded bore in each second member in a position such that it can be aligned with a respective slot in the first structural member

(c) a pair of eye bolts having threads which mate with a respective one of the internally threaded bores, and each eye bolt having a ring which is sized to pass through an associated slot when centered and aligned longitudinally therewith and to hold the first structural member to a second structural member when said eye bolt is aligned transversely and

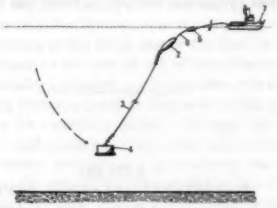
(d) means for holding each of the two eye bolts at the ends of their associated slots on the first structural member, such that the eyebolts are not centered with respect to their associated slots, whereby the eyebolts are effective to hold first and second structural members together for as long as the eyebolts remain threadably engaged with the second structural member and without regard for the orientations of the eyebolts with respect to their associated slots.

4,271,550

METHOD FOR SUBMERGING AN EQUIPMENT OF NEGATIVE BUOYANCY

Philippe Joubert, Les Loges en Josas; Pierre Durando, Paris, and Daniel Fleury, Nantes, all of France, assignors to Institut Francais du Petrole, France

Filed May 18, 1978, Ser. No. 907,192
Claims priority, application France, May 26, 1977, 77 16451
Int. Cl.[3] B63B *21/52*
U.S. Cl. 9—8 R **7 Claims**



1. A method for submerging to a preselected location with respect to the water bottom a heavy equipment having in conditions of use a negative buoyancy and comprising at least one heavy element, this method comprising the steps of:

(a) connecting through a line the heavy equipment to auxiliary element means, the assembly formed by the heavy equipment and said auxiliary element means having a non-negative buoyancy, and maintaining the heavy equipment and the auxiliary element means in lateral spaced relationship,

(b) positioning said auxiliary element means substantially above said preselected location, then subjecting the heavy equipment to the action of gravity by providing negative buoyancy thereto, the length of the connecting line being so limited that the heavy equipment then becomes suspended in water under said auxiliary element means substantially above said preselected location, without reaching the water bottom,

(c) adjusting, if so required, the location of the heavy equipment with respect to said preselected location, and

(d) reducing the buoyancy of said assembly to at least a slightly negative value, until said heavy equipment reaches said preselected location.

4,271,551

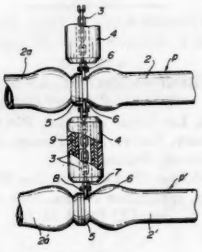
BINDING DEVICE FOR HOSES FLOATING ON WATER SURFACE

Mamoru Tanaka, Yokohama, Japan, assignor to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,537
Claims priority, application Japan, Feb. 1, 1978, 53-10060[U]
Int. Cl.[3] B63B *21/52;* F16L *55/00*
U.S. Cl. 9—8 R **6 Claims**

1. In a binding device for hoses floating on water surface, particularly, for a plurality of hoses arranged in parallel and floating on the water surface, the improvement comprising a chain connecting adjacent two hose lines and a resilient cylindrical cushioning body having a center bore surrounding said

chain and including buoyant means and a reinforcing element embedded therein, said chain extending through said center



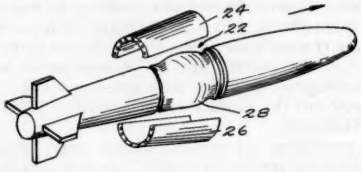
bore of said cylindrical cushioning body and assembled therewith.

4,271,552

TORPEDO FLOATATION DEVICE

Charles S. Sandler, Silver Spring, Md., assignor to Presearch Incorporated, Arlington, Va.

Filed Jul. 6, 1979, Ser. No. 55,401
Int. Cl.³ B63B *21/52, 51/02*
U.S. Cl. 9—9 **8 Claims**



1. A recovery system for underwater projectiles comprising:

a generally cylindrically shaped sleeve having first and second ends for surrounding at least a portion of said projectile;

first means for clamping said first end of said sleeve circumferentially about said projectile at a first longitudinal position along said projectile so as to form a gas-tight seal between said sleeve and said projectile at said first longitudinal position;

second means for clamping said second end of said sleeve circumferentially about said projectile at a second longitudinal position along said projectile so as to form a gas-tight seal between said sleeve and said projectile at said second longitudinal position, said sleeve having a length greater than the distance between said first and second longitudinal positions such that it can be layered over itself when being secured at said first and second longitudinal positions;

third means for clamping a layered portion of said sleeve at a third longitudinal position along said projectile, said third longitudinal position further removed from said first longitudinal position than said second longitudinal position is from said first longitudinal position and along the same direction along which said second longitudinal position is located with respect to said first longitudinal position; and

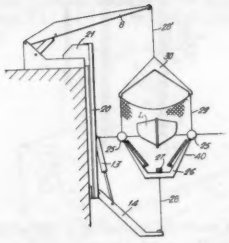
means for injecting gas into the region bounded by said sleeve and said projectile for inflating said sleeve.

4,271,553

SYSTEM FOR LAUNCHING AND HAULING IN OBJECTS FROM THE SEA

Nils Korsvik, Aukra, Norway, assignor to A/S Aukra Bruk, Aukra and A/S Blehr Og Tenvig, Oslo, both of, Norway

Filed Jan. 2, 1979, Ser. No. 334
Claims priority, application Norway, Jan. 6, 1978, 780060
Int. Cl.³ B63C *9/22*; B63B *23/30*
U.S. Cl. 9—14 **11 Claims**



1. An apparatus for launching and hauling in objects such as boats and people from the sea, said apparatus including:

a pivotable jib means which is mountable on the top of a floating vessel or stationary platform so as to be capable of having its free end extend beyond the side of said floating vessel or stationary platform,

a stabilizing means positionable along the side of said floating vessel or stationary platform so as to be locatable below the free end of said pivotable jib means when said free end extends beyond the side of said floating vessel or stationary platform,

a yoke means suspended from the free end of said jib means,

an elongated floatable dock means suspended from said yoke means, said floatable dock means comprising a dock body and multiple floats mounted thereon so as to buoy said dock body in the water,

an adjustable pick-up net mounted between said yoke means and said floatable dock means, and

means connecting said floatable dock means with said stabilizing means so as to stabilize the movement of said dock means and maintain a substantially constant spacing between said dock means and the side of said floating vessel or stationary platform when said jib means is pivoted so as to move said dock means from a rest position on top of said floating vessel or stationary platform to a floating position in the sea and vice versa.

4,271,554

COMBINATION DRILL AND TAP TOOL

David Grenell, Laurelton, N.Y., assignor to Allen-Stevens Corp., Woodside, N.Y.

Filed Jan. 9, 1979, Ser. No. 2,221
Int. Cl.³ B23G *5/06*
U.S. Cl. 10—152 T **5 Claims**

1. A combination drill and tap tool for drilling a hole into a plastically deformable metal work piece and, without removing the tool from the hole, coining a helical thread from the metal adjacent the interior surface of the hole, said tool comprising:

an elongated rectilinear body having a leading metal drill portion with a boring tip and a coining tap portion integral with and operatively following said drill portion,

said coining tap portion having a lead-in end connected to the end of the drill portion remote from the boring tip,

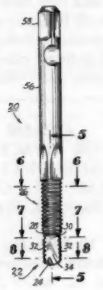
said drill portion including two opposed interior chasing lands separated by circumferentially intermediate portions,

said boring tip being adapted to drill a hole of a predetermined diameter,

the diameters of said opposed lands being substantially equal to that of said hole and the diameters of said intermediate portions being less than that of said hole,

said coining tap portion being constructed to form a female thread by cold flow of the metal adjacent the surface of said drilled hole without removing the tool from the hole,

said female thread having a predetermined root diameter



greater than said predetermined diameter of said hole, a predetermined crest diameter less than said predetermined diameter of said hole, and a predetermined pitch,

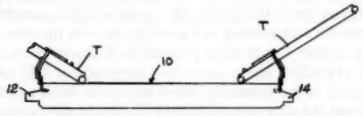
each of said opposed lands having notches so relatively spaced, positioned, dimensioned and shaped that both of said lands track the entire coined female thread and clear the crest thereof when the tool is unscrewed to completely retract the same from a drilled and tapped hole.

4,271,555

REINFORCED CONCRETE BRIDGE DECKING AND METHOD OF MAKING SAME

Joseph Mingolla, P.O. Box 112, Millbury, Mass. 01527, and John B. Stubbings, 402 Mass. Ave., Cambridge, Mass. 02139

Filed Mar. 14, 1979, Ser. No. 20,472
Int. Cl.³ E01D *19/12*
U.S. Cl. 14—73 **18 Claims**



6. Deck structure for bridges or the like, comprising:

deck support means comprising a sub-decking;

a plurality of parallel, spaced apart rails extending across the deck and secured on the deck support means, said rails each having laterally projecting foot flanges and a laterally enlarged head;

a plurality of deck panels spanning the distance between adjacent rails and supported on said rails;

resilient bearing pads engaged between the panels and the foot flanges of the rails to resiliently support the panels on the rails; and

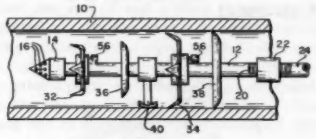
resilient locking wedges engaged between the panels and the head of the rails to retain the panels in place on the rails, said resilient bearing pads and locking wedges comprising the only connection between the panels and rails.

4,271,556

PIPE CLEANING APPARATUS

Eugene C. Farrell, Jr., 434 70th Ave., East Moline, Ill. 61265

Filed Jun. 8, 1979, Ser. No. 46,878
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—104.3 R **5 Claims**



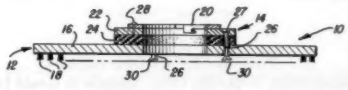
1. Apparatus for cleaning a sewer line or the like, comprising: an elongated, rigid tubular member adapted to be inserted coaxially into the line and having front and rear ends; means at the rear end of the member for connection to a source of water under pressure; means at the front end of the line for ejecting water under pressure to the line ahead of the member; rotary cutter means coaxially journaled on the member rearwardly of the water-ejecting means; a conduit disposed within the member and having a jet extending radially through the member behind the cutter, said conduit having a rear end connectible to a source of air under pressure for pressurizing the jet; and impeller means at the rear of and connected to the cutter for receiving air under pressure from the jet to rotate the cutter.

4,271,557

SHOCK ABSORBING FLOOR BRUSH ASSEMBLY

Beryl Caron, Los Angeles, Calif., assignor to Zimmerman Brush Co., Chicago, Ill.

Filed Apr. 27, 1979, Ser. No. 33,886
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—180 **10 Claims**



1. A brush capable of being secured to the central vertical shaft of a rotary floor cleaning machine which comprises:

a drive disk;

means for coupling said drive disk to the machine shaft;

a brush disk spaced from and in concentric, substantially parallel planar relationship to said drive disk, said brush disk having a rigid back portion having a lower surface with flexible brush elements extending outwardly from said lower surface; and,

connecting means interposed between and connected to said drive disk and said brush disk to transmit torque therebetween and to resiliently absorb vertical, horizontal and torque shocks and stresses, comprising:

resilient means interposed between said drive disk and said brush disk for absorbing shocks and stresses and urging said drive disk and said brush disk apart; and,

fastening means for securing said brush disk in spaced subtending relationship to said drive disk and limiting the resilient separation thereof by said resilient means, comprising:

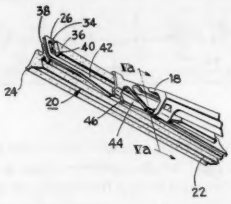
a plurality of fasteners each having a first end affixed to said drive disk and a second end extending through said brush disk and limiting the outward displacement of said brush disk from said drive disk; said brush disk slidably movable on said fasteners for permitting substantial vertical limited relative movement of said brush disk towards said drive disk.

4,271,558

WINDSHIELD WIPER BLADE REFILL ASSEMBLY AND ADAPTER CLIPS

Anthony R. D'Alba, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,814
Int. Cl.[3] B60S 1/02
U.S. Cl. 15—250.42 **10 Claims**



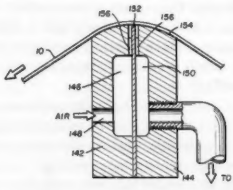
1. In a windshield wiper blade refill assembly including refill unit comprising an elongate elastomeric squeegee element having a relatively narrow wiping lip along one longitudinal edge and a relatively wide backing element of stiff resilient material adjacent the opposite longitudinal edge, the backing element being adapted to be slidably retained in a pressure-applying wiper blade superstructure having a set of depending longitudinally spaced aligned pairs of opposed claws and a set of adapter clips for fitting said refill unit to said superstructure, the improvement wherein each adapter clip of said set comprises a unitary, shaped piece of stiff, resilient sheet material formed to comprise a base portion having a pair of opposed adapter claws depending therefrom, said depending claws being spaced apart a distance sufficient to slidably receive opposite side edges of said backing element and a forwardly extending latching element for interlockingly engaging a pair of opposed claws on the superstructure and means for positively securing at least one of said clips and the backing element together.

4,271,559

TONER CLEAN-OFF HEAD

John Blumenthal, Wickliffe, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 903,855, May 8, 1978, Pat. No. 4,198,923. This application Oct. 1, 1979, Ser. No. 80,898
Int. Cl.[3] A47L 5/14
U.S. Cl. 15—308 **2 Claims**



1. An improved toner clean-off head for removing excess liquid toner from the surface of a moving record medium bearing an electrostatic image which has been developed by the application of liquid toner, comprising:

a housing having a cylindrical upper surface and an interior volume, said record medium being drawn over said cylindrical upper surface;

a slot in said upper surface extending into said interior volume;

a thin clean-off blade positioned in said slot so that the upper edge of said blade essentially forms an element of said cylindrical upper surface and that a first and a second flow passage are defined on either side of said blade; and

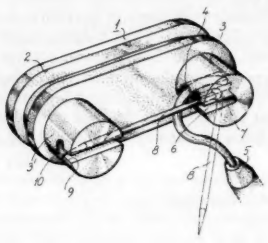
means for dividing said interior volume into an air inlet plenun and a toner exhaust plenum, said air inlet plenum being vented to the atmosphere and in communication with said first flow passage, said exhaust plenum being in communication with a vacuum means and with said second flow passage, such that air is drawn into said inlet plenum, through said first flow passage, over the upper edge of said clean-off blade to entrain excess liquid toner from said record medium, through said second flow passage and out said exhaust plenum, said record medium forming a seal against said cylindrical upper surface.

4,271,560

ARRANGEMENT FOR ATTACHING, FOLDING AND SLIDABLE SUSPENSION OF CURTAINS, DRAPERIES AND THE LIKE AT A CURTAIN ROD

Göran J. F. Hard af Segerstad, Borgmästarvägen 4, S-19030 Sigtuna, Sweden

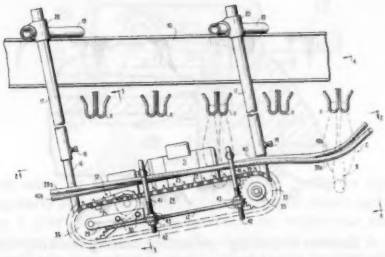
Filed Oct. 10, 1978, Ser. No. 949,690
Claims priority, application Sweden, Oct. 7, 1977, 7711309
Int. Cl.[3] A47N 15/00
U.S. Cl. 16—93 D **2 Claims**



1. In a curtain clasp for attaching, folding and slidable suspension of curtains, draperies and the like at a curtain rod, having a needle slide member and means cooperating therewith to allow slidable movement of the needle slide member in a slot of a curtain rod, said needle slide member consisting of an oblong mirror-symmetrical plate provided at one of its longitudinal faces with means for maintaining and guiding the slide member in the slot of the curtain rod, and at the other of its longitudinal faces with a pair or projecting studs with open slots at the ends adapted to receive a curtain suspension pin bridging over the studs, the improvement comprising said means for maintaining and guiding the slide member in the slot of a curtain rod being a projection T-shaped in cross-section and extending along the entire longitudinal side of the slide member in the symmetry plane thereof to form a slide shoe for moving the slide member along the slot of the curtain rod with the flanges of the "T" acting as guides for the slide member during its displacement, and one of said pair of projecting studs is provided with a quarter-quadratic slot open both at right angles outward from the free end of the stud and in a direction towards the other of said pair of studs, said slot of said one stud being aligned with the symmetry plane of the slide member, and the bottom of which being located approximately at the center of the stud and branched to form a T-shaped channel system, the width of the stem and branch channels of which being chosen with respect to the curtain suspension pin so as to allow the pin with its head to be urged downwards through the open channel into pivotal engagement with the stud in the meeting point of the stem channel and its branch channels in the center of the stud; and wherein the other of said pair of projecting studs is provided with a slot extending diametrically through the stud along the symmetry plane thereof, said slot having at its bottom a widened hole extending in the longitudi-

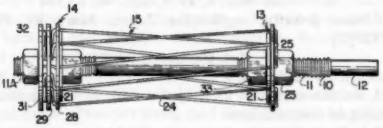
nal direction of the slide member and adapted to support and maintain the tip of the pin under the weight of the curtain.

4,271,561
POULTRY DISMEMBERING APPARATUS
Eugene J. Lewis, Rt. #1, Box 306, Demorest, Ga. 30535
Filed Sep. 11, 1979, Ser. No. 74,573
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—11 **8 Claims**



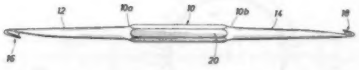
1. Poultry dismembering apparatus for disjointing and removing the leg and thigh portions from the backs of poultry leg and back carcasses pendulously supported by the legs from shackles suspended at spaced intervals from an overhead conveyor movable along a predetermined path, said apparatus comprising an elongated dismembering conveyor mounted below the level of said shackles for movement along a path diverging both horizontally and vertically at acute angles from said overhead conveyor path, said dismembering conveyor being adapted to engage one side of the carcass back and carry said backs along the dismembering conveyor path of movement and including means for moving said dismembering conveyor with engaged carcasses along said dismembering conveyor path of movement between entrance and exit ends of said dismembering conveyor in the same direction as said overhead conveyor path, and means supported in alignment with and spaced closely above said dismembering conveyor below said shackles adapted to contact the carcasses adjacent the juncture of the carcass leg thighs and the side of said carcass back opposite said one side contacted by said dismembering conveyor for retaining said backs in engagement between said dismembering conveyor and overlying retaining means and causing the engaged thigh portions immediately adjacent the backs to follow the horizontal line of motion of said dismembering conveyor as the carcass legs are carried by the shackles along a diverging path suspended below the overhead conveyor, thereby parting the legs and thighs from the backs retained between said dismembering conveyor and retaining means.

4,271,562
FISH SCALER
Nicholas Penner, Box 37, Teulon, Manitoba, Canada
Filed Dec. 10, 1979, Ser. No. 101,833
Claims priority, application Canada, Dec. 18, 1979, 318164
Int. Cl.³ A22C *25/02*
U.S. Cl. 17—67 **8 Claims**



1. A fish scaler comprising in combination a drive spindle attachable to a source of power for rotation; comprising in combination a pair of spaced apart anchor elements on said spindle, a plurality of scaling elements extending between and held by said anchor elements in cylindrical array, a screw threaded means cooperating between at least one of said anchor elements and said spindle to move said one anchor element length-wise on said spindle relative to the other anchor element, thereby controlling the tension in said scaling elements, at least one end of said scaling elements including a double angulated end portion having an inner angulated portion extending substantially at right angles to said scaling element and an outer angulated portion extending from the end of said inner angulated portion in substantially spaced and parallel relationship thereto, to form a substantially U-shaped end engaging said one of said anchor elememts, said anchor elements engaged by said outer angulated portion incuding a centrally apertured holding disc freely engaging over said spindle, means in said holding disc to receive said angulated portion of said scaling element whereby said inner angulated portion engages upon one side of said disc and said outer angulated portion engages upon the other side of said disc, a further centrally apertured disc freely engaging said spindle on the inner side of said holding disc and engaging against said inner angulated portion, said scaling elements engaging through said further disc, a centrally apertured clamping disc freely engaging said spindle on the outer side of said holding disc and engaging said outer angulated portion, and means cooperating between said spindle and said discs, upon either side of said discs, to clamp said discs together and hence clamp said inner and outer angulated portions between said holding disc and said further disc, and between said holding disc and said clamping disc, respectively.

4,271,563
SHELLFISH EXTRACTION TOOL
James L. Theuman, Katy, Tex., assignor to Markay International, Inc., Katy, Tex.
Filed Jan. 24, 1980, Ser. No. 114,907
Int. Cl.³ A22C *29/00*
U.S. Cl. 17—71 **6 Claims**

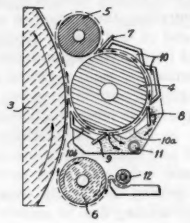


1. A shellfish meat extraction tool comprising:
(a) a body portion for manual grasping;
(b) at least one connecting portion extending from one end of said body portion; and
(c) a first cutting means formed at the outer extremity of the one connecting portion, said first cutting means comprising curvilinear lateral extension at the extremity of the one connecting portion, with the outermost edge of said lateral extension forming a cutting edge which is inclined with respect to said one connecting portion.

4,271,564
COMBER-CLEANER CARDING DEVICE
Juan B. Estebanell, Av. Dr. Fleming, 8 San Fructuoso Del Bages, Barcelona, Spain
Filed Apr. 11, 1979, Ser. No. 29,162
Claims priority, application Spain, Apr. 11, 1978, 235.283[U]
Int. Cl.² D01G *15/04*
U.S. Cl. 19—100 **9 Claims**

1. In a carding device of the type having a large rotatable carding drum having a first direction of rotation and provided with means for carrying a fibrous web on the surface thereof, feed means for feeding the fibrous web onto the carding drum, a comber-cleaner assembly mounted for cooperating with the carding drum, the comber-cleaner assembly including stripper means for removing the web from the carding drum, worker

means and plaque segment means disposed adjacent said worker means for defining a semicircular run wherein the web is opened, cleaned and combed, the improvement which comprises plaque segment means including at least three plaque



segments disposed in a covering shell for defining at least two channels between said segments and at least two extractor blades disposed in said channels between adjacent plaque segments for removing impurities from the web.

4,271,565

METHOD AND APPARATUS FOR REGULATING OUT VARIATIONS IN THE SLIVER WEIGHT ON DEVICES FOR PROCESSING FIBRE SLIVERS

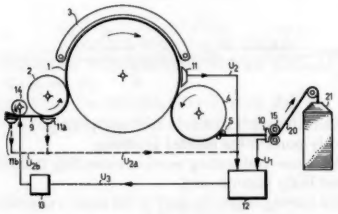
Werner Grunder, Mönchaltorf, Switzerland, assignor to Zellweger Uster, Ltd., Uster, Switzerland

Filed Apr. 26, 1979, Ser. No. 33,447

Claims priority, application Switzerland, Apr. 26, 1978, 4497/78

Int. Cl.³ D01H *5/38*

U.S. Cl. 19—240 **40 Claims**



1. A method of regulating out variations in the silver weight on a device for processing a fibre silver wherein said device has an inlet and an outlet for the fibre silver and silver processing cylinders, comprising:

making a first cross-sectional measurement of the fibre silver, and forming a first test signal corresponding to this first measurement;

making a second measurement of the relative variations in the cross-section of the fibre material which is located on said silver processing cylinders with respect to an average value for these variations formed over a predetermined period, and forming a second test signal corresponding to this second measurement, wherein said second measurement is made at a position adjacent to said silver processing cylinders and closer to the inlet of the device than the position where the first measurement is made; and

controlling at least one regulating device which regulates the cross-section of the fibre silver in accordance with said first and second test signals.

4,271,566

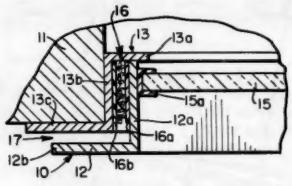
SHEAR ATTACHMENTS USING HOOK AND LOOP FASTENER ELEMENTS

Joseph Perina, Huntington, N.Y., assignor to Velcro USA Inc., New York, N.Y.

Continuation of Ser. No. 750,002, Dec. 13, 1976, which is a continuation of Ser. No. 151,744, Jun. 10, 1971. This application Jun. 4, 1979, Ser. No. 45,082

Int. Cl.³ A44B *17/00*; E05C *21/02*

U.S. Cl. 24—204 **13 Claims**



1. A fastener including upstanding mating hooking elements of the hook-type and loop-type having the property that when a plurality of such hooking elements are placed in face-to-face relation with a plurality of mating hooking elements numerous engagements of the hooking elements take place and the elements resist separation by forces substantially parallel to the interfacial plane of engagement, comprising:

(a) at least first and second fastener members, each having at least one surface containing hooking elements capable of mating with the hooking elements of the other; and

(b) substantially rigid structural members secured to said fastener members for positioning said fastener members such that said surfaces are maintained in substantially rigid parallel relation and confined in a substantially fixed spaced relationship, which space is sufficiently less than the combined height of the hooking elements upstanding from both surfaces such that at least certain of the hooking elements are brought into a hook and loop-type engaged relation by forcibly directing the hooking elements of at least one of said fastener members in a direction generally normal to the projection of said hooking elements such that interposition of a third member between said surfaces over at least a portion of the engagement area of said hooking elements without physically destroying a substantial portion of the engaged hooking elements in said area is thereby precluded, such that relative movement of the fastener members is confined generally along the direction perpendicular to the projection of said hooking elements, and attachment and detachment of the respective members is achieved only by forces substantially parallel to the respective surfaces of said fastener members in sufficient magnitude to overcome the progressive resistance of the hooking elements progressively engaging and disengaging as they are moved relative to each other.

4,271,567

AUTOMATIC LOCK SLIDER FOR SLIDE FASTENER

Tsunetaka Aoki, Kamiichi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,944

Claims priority, application Japan, Mar. 30, 1978, 53-41529[U]

Int. Cl.³ A44B *19/30*

U.S. Cl. 24—205.14 R **6 Claims**

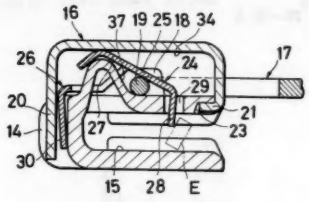
1. An automatically locking slider for a slider fastener, comprising in combination:

(a) a body including first and second wings connected at one end by a neck so as to define therebetween a generally Y-shaped guide channel;

(b) a yoke attached to said first wing;

(c) a locking spring supported on said body and concealed by said yoke, said locking spring having a locking prong movable into and out of said guide channel, a first retaining portion resting on said body, and a second retaining portion;

(d) pivot means supporting said second retaining portion in a plane above and remote from the general plane of said



first wing so as to permit said locking prong to move angularly about said pivot means, said pivot means including a pair of opposed projections on respective inner surfaces of opposite side walls of said yoke; and

(e) a pull tab connected to said locking spring for retracting said locking prong away from said guide channel against the bias of said locking spring.

4,271,568

METHOD OF CUTTING COLUMNS OF THREAD LOOPS

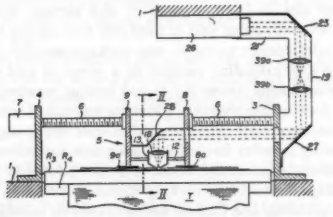
Gerard Durville, Le Lignon, Geneva; Michel Moulin, Lausanne; Serge Ramseier, Carouge, Geneva, and Erwin Zurcher, Le Lignon, Geneva, all of Switzerland, assignors to Cotonificio Cantoni S.p.A., Milan, Italy

Division of Ser. No. 844,278, Oct. 21, 1971, Pat. No. 4,159,558, which is a continuation-in-part of Ser. No. 836,094, Sep. 23, 1977, abandoned, which is a continuation of Ser. No. 641,365, Dec. 17, 1975, abandoned. This application Nov. 15, 1978, Ser. No. 960,782

Claims priority, application Switzerland, Dec. 24, 1974, 17270/74; Oct. 22, 1976, 13365/76

Int. Cl.³ D06C *13/08, 13/10*

U.S. Cl. 26—9 **1 Claim**



1. A process for severing parallel columns of parallel yarn loops on a surface of a fabric web which comprises the steps of:

displacing said web past a cutting station in a direction parallel to the columns thereby successively disposing the thread loops at a predetermined location;

engaging in the thread loops of the column as they approach said location a guide needle having a portion disposed at said location such that the thread loops successively rest upon said needle at said location;

training a laser beam at said location with an axis inclined in a plane perpendicular to said web and to a column of thread loops advanced along said needle to said location, said axis lying to one side of a plane perpendicular to said web location.

individually focussing said laser beam successively upon a predetermined portion of each of said thread loops of the latter column at said location upon said needle for a period of time sufficient to cause combustion of at least part of the fibers forming the respective thread loop;

directing a jet of fluid onto the zone of focus of said laser beam at said location, and

retaining each thread loop at said location against an abutment on said needle and accelerating following thread loops toward said abutment whereby, in the region of said location, the successive thread loops are disposed substantially in contact with one another and encounter said laser beam without significant impingement of said laser beam upon said needle.

4,271,569

TENTER APPARATUS FOR FABRIC WEB TENTER MACHINES

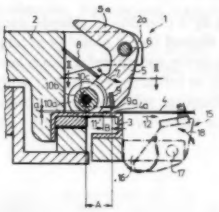
Reinhold Grün, Rudersberg-Oberndorf; Dietrich Troster, Weil der Stadt, and Bruno Gleich, Wendlingen, all of Fed. Rep. of Germany, assignors to Bruckner-Trockentechnik KG, Leonberg, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,378

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737091

Int. Cl.³ D06C *3/10*

U.S. Cl. 26—79 **6 Claims**

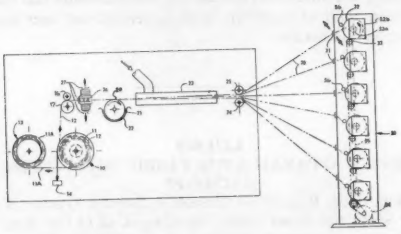


1. In tenter apparatus having a support provided with a surface at a level to support one edge of a fabric web, a body having one end thereof confronting said support surface and pivotally mounted between its ends for movement of said one end toward and away from said surface, a first clamp fixed to said body adjacent said one end of said body and comprising a rotary roller having relatively large diameter flanges joined by a relatively small diameter hub, a second clamp fixed to said body adjacent said one end and in fixed spaced relation to said first clamp, the relative positions of said first and second clamps being such that movement of said one end of said body toward said support is operable to effect positioning of said flanges at the level of said surface while said hub and said second clamp are spaced from such level, and said support having openings into which said flanges are movable to pass through the level of said surface in response to continued movement of said one end of said body toward said support, the improvement wherein said hub of said first clamp is engageable with said support to terminate movement of said one end of said body toward said support following movement of said flanges into said openings and through the level of said surface, and wherein the diameter of said hub is so related to the spacing between said first and second clamps that when movement of said one end of said body toward said support is terminated by engagement between said hub and said support surface said second clamp is adjacent but spaced from the level of said surface a minimum distance which is less than the thickness of said fabric web, thereby to limit the clamping force said second clamp may apply on said web.

4,271,570
GRAPHITE FIBER ALIGNMENT PROCESS AND APPARATUS

Frederick H. Curzio, Garden Grove, Calif., assignor to Textile Products, Inc., Anaheim, Calif.

Filed Aug. 14, 1978, Ser. No. 933,658
Int. Cl.[2] B65H 54/20
U.S. Cl. 28—290 10 Claims



1. A process for aligning graphite strands from a tape of graphitized fibers which comprises the steps of:

i. initially separating individual graphite strands from the tape;

ii. diverging the strands while separating the strands from the graphitized tape under tension;

iii. feeding each strand through a separate alignment tube; and,

iv. winding up a plurality of strands, each strand being on a separate aligned reel, a plurality of aligned reels having at least one drive rod therefor, each reel being maintained forwardly in off-centered contact with the drive rod due to strand tension, whereby release of strand tension causes the reel to move out of alignment.

4,271,571
PROCESS FOR MANUFACTURING SHADOW MASK OF BRAUN TUBE FOR COLOR TV

Takeshi Tsuda, Takatsuki; Michio Kubota, Amagasaki; Kazuhiro Takagi, Amagasaki; Masahiro Shimose, Amagasaki; Yasuo Imamura, Urawa, and Kazunori Kato, Tokyo, all of Japan, assignors to Nisshin Steel Co., Ltd. and Dai Nippon Printing Co. Ltd., both of Tokyo, Japan

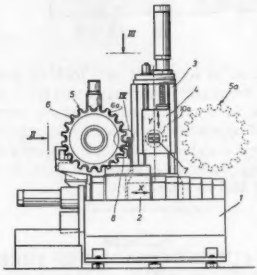
Filed Oct. 11, 1979, Ser. No. 83,635
Claims priority, application Japan, Oct. 18, 1978, 53-128031
Int. Cl.[3] H01J 9/02
U.S. Cl. 29—25.18 3 Claims

1. A process for manufacturing a shadow mask of a Braun tube for a color TV, comprising the steps of subjecting a strip of low carbon steel to a cold rolling finish with a rolling reduction of 10 to 35% to provide a steel strip material of not more than 0.2 mm in thickness, forming predetermined patterns of holes in the material by a photo-etching technique, cutting the material into individual flat masks of a predetermined dimension, annealing each flat mask at a temperature of 520° to 750° C., conditioning the annealed mask by passing it through a roller leveller, and press-forming the conditioned flat mask into a desired shape.

4,271,572
MACHINE TOOL HAVING AT LEAST ONE TOOL MAGAZINE

Willi Lipp, Witten-Annen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 16,074
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812200
Int. Cl.[3] B23Q 3/157
U.S. Cl. 29—26 A 4 Claims



1. A machine tool comprising, a tool magazine with at least one magazine disk having a plurality of substantially semi-circular storage recesses for storing tool carriers, each storage recess having a trapezoidal projection, at least one tool carrier having a collar with a circular trapezoidal groove engageable with said trapezoidal projection of at least one of said storage recesses, a single locking member pivotably mounted on said magazine disk in front of each of said storage recesses for locking and unlocking said at least one tool carrier to at least one of said storage recesses, said locking member pivotable about an axis extending parallel to a plane of said magazine disk, spring means connected to said locking member for biasing said locking member into a locking position thereof to lock said at least one tool carrier in said at least one storage recess, said locking member having a locking cam extending in front of said tool carrier collar when said tool carrier is locked in said storage recess, said locking member including a swivel cam for pivoting said locking member into an unlocking position thereof for moving said locking cam away from said tool carrier collar to release said tool carrier, a manual actuation cam for manually releasing said tool carrier from said storage recess extending in a direction opposite from said locking cam and connected to said locking member, said locking cam and manual actuation cam extending in a direction contained in a plane extending transverse to said axis, said swivel cam extending in a direction substantially perpendicular to the plane containing the extension direction of said locking and manual actuation cams, a machine stand having a headstock thereon and a main spindle on said headstock, said main spindle having a front end face which is adapted to receive the tool carrier and which face has at least one stop cam having side edges on each side with a bevel disposed in a position to contact said swivel cam of said locking element to pivot said locking element when said tool magazine is moved in a direction substantially parallel to said axis.

4,271,573

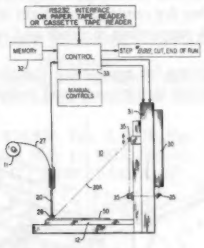
QUICK-CONNECT INTERCONNECTION SYSTEM

Charles A. von Roesgen, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 892,106, Mar. 31, 1978, which is a continuation-in-part of Ser. No. 630,183, Nov. 10, 1975, abandoned. This application Jun. 13, 1979, Ser. No. 48,022

Int. Cl.[3] **H05K** *13/06*

U.S. Cl. 29—33 M **4 Claims**



1. System for electrically wiring electrical components onto a circuit board comprising:

(1) a stationary mounting surface for supporting the circuit board

(2) a wiring tool for inserting electrical wire into selected wire receptacles on the circuit board, said wiring tool comprising an elongated housing, means for feeding electrical wire along the housing, applicator means at one end of the housing for inserting electrical wire into selected wire receptacles in the circuit board,

(3) selector means for selecting receptacles in the circuit board, said selector means comprising a light source for generating a beam of light, deflector means for moving the light beam along the circuit board to illuminate selected receptacles on the circuit board, control means for positioning the deflector means, memory means connected to said control means for generating electrical command signals in a predetermined sequence and deflect the light beam in response to that sequence,

light detection means mounted on the wiring tool, for generating an electrical output signal when exposed to the light beam, and

electrical interconnection means between the light detection means and the memory means for activating the electrical command signals from the memory means.

4,271,574

MECHANICAL DRIVE FOR ROTATABLE MANTLE ROLL MOUNTED ONTO A STATIONARY AXLE, ESPECIALLY FOR A DEFLECTION-COMPENSATED ROLL MANTLE OF A PAPER MACHINE

Martti Matikainen, Ulvila, Finland, assignor to Hunt & Moscrop (Paper Machinery) Ltd., Middleton, England

Filed Apr. 27, 1979, Ser. No. 33,958

Claims priority, application Finland, Apr. 27, 1978, 781325

Int. Cl.[3] **B60B** *15/16;* **F16H** *57/00, 1/28*

U.S. Cl. 29—115 **16 Claims**

1. A mechanical drive for a rotatable mantle roll mounted on a stationary axle, said axle having an axle end region, said mechanical drive comprising:

a supporting frame, said supporting frame surrounding said axle end region;

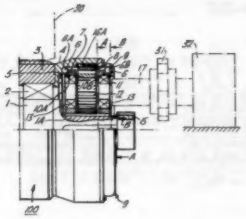
at least one shaft;

at least one driving gear driven by said shaft and journalled to said supporting frame;

an internally toothed gear ring, said gear ring being connected to said rotatable mantle roll and being driven by said at least one driving gear;

a shell member stationarily connected to said rotatable mantle roll;

bearing means mounted inside said shell member for supporting said supporting frame; and



locking means for locking said supporting frame with respect to said stationary axle;

wherein said at least one driving gear and said internally toothed gear ring are guided independently of said stationary axle.

4,271,575

CONTROLLED DEFLECTION ROLL

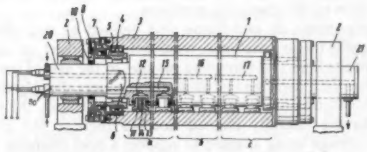
Rolf Lehmann, Radolfstetten, Switzerland, assignor to Escher Wyss Limited, Zürich, Switzerland

Filed Aug. 9, 1979, Ser. No. 65,058

Claims priority, application Switzerland, Aug. 22, 1978, 8898/78

Int. Cl.[3] **B30B** *15/16;* **F16C** *7/04;* **B21B** *13/14*

U.S. Cl. 29—116 AD **6 Claims**



1. A controlled deflection roll comprising:

a stationary support;

a substantially tubular-shaped roll shell;

means for mounting said substantially tubular-shaped roll shell to be rotatable about said stationary support;

a plurality of hydrostatic pressure elements located between said stationary support and said roll shell;

said hydrostatic pressure elements being supported at said stationary support and serving to exert pressure upon the roll shell and being capable of urging said roll shell in the direction of a countersupport;

means providing a pressure chamber for each hydrostatic pressure element;

at least one channel provided in said stationary support;

source means for hydraulic pressurized fluid medium;

said pressurised fluid medium-source means containing a pump for the infeed of hydrolic pressurized fluid medium, by means of said at least one channel, to said hydrostatic pressure elements;

a drive motor for driving said pump;

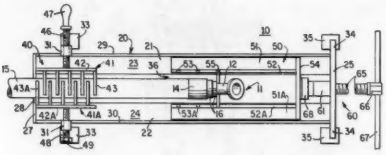
said stationary support including an end protruding out of said roll shell; and

said pump together with its drive motor being carried by said protruding end of said stationary support.

4,271,576
APPARATUS FOR APPLYING COUPLING TO HOSE

David W. Gunning, Libertyville, Ill., assignor to Anchor Coupling Co., Inc., Libertyville, Ill.

Filed Jun. 27, 1979, Ser. No. 52,460
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—237 5 Claims



1. Apparatus for applying a coupling to an end of a length of hose, the apparatus comprising: a longitudinally extending frame;

two clamping members carried by said frame and adapted for receiving and securing the end of the hose therebetween, each of the clamping members including a plurality of spaced parallel bearing plates, each bearing plate having formed therein a recess which defines a bearing surface adapted to engage a portion of the exterior surface of the hose, the bearing plates of one of the clamping members being disposed in alternating relationship to the bearing plates of the other clamping member, the clamping members being substantially horizontally movable in a direction substantially normal to the axis of the associated hose;

adjusting means coupled to the clamping members for effecting movement thereof toward each other and into engagement with the hose to securely hold the end of the hose in a predetermined position relative to the frame, the adjusting means including two screws, said screws being operatively associated with and adapted to horizontally move each of the clamping members;

guide means on said frame, and defined by two elongated guide tracks, one guide track being disposed on each side of the hose and extending parallel to the axis of the frame;

a coupling carriage including two runners slidably disposed for sliding movement along the guide tracks, the runners having laterally aligned notches therein, the coupling carriage being adapted to support a hose coupling co-axially with the length of hose;

a support member adapted to be received in the notches of the runners and extending between the runners, said support member having a recess formed therein for receiving the coupling carriage;

a drive mechanism associated with the coupling carriage for moving the coupling carriage along the guide tracks toward the clamped hose, the drive mechanism including a ball nut and screw assembly carried by said frame, said screw assembly including thrust bearing means adapted for non-rotational engagement of the coupling carriage when the screw is rotated, whereby the screw may be selectively rotated to move the coupling carriage axially relative to the frame for pressing the coupling onto the end of the hose.

4,271,577
ALIGNMENT DEVICE

Masao Kosugi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 32,735
Claims priority, application Japan, Apr. 28, 1978, 53/51849
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—238 2 Claims

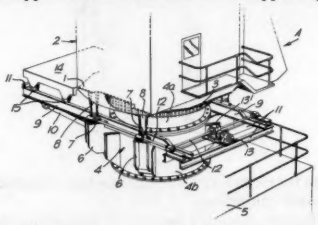
1. An alignment device wherein a relatively flexible mask and a wafer are brought into intimate contact with each other for the manufacture of a semiconductor circuit element, comprising:

a mask supporting member for supporting the mask, said mask supporting member being provided with an opening which is covered by the mask when the mask is placed for support by the mask supporting member;

a wafer supporting member, of a non-flexible material, for supporting the wafer in opposition to the bottom surface of the mask, said wafer having an area less than that of said opening of said mask supporting member;

a seal member for rendering air-tight the clearance between said mask supporting member and said wafer supporting member;

a vacuum pump for evacuating the clearance between said mask support member and said wafer supporting member



and for bringing the mask into intimate contact with the wafer;

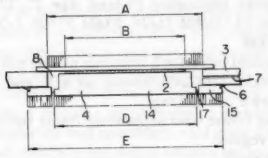
a wafer side pressure receiving surface of a predetermined effective area for receiving a load distribution corresponding to the differential between the vacuum pressure and the atmospheric pressure when said vacuum pump is operated; and

a mask side pressure receiving surface of a predetermined effective area for receiving a load distribution corresponding to the differential between the vacuum pressure and the atmospheric pressure when the mask is brought into intimate contact with the wafer by the operation of said vacuum pump, said effective area of said mask side pressure receiving surface being enough to prevent the central portion of the mask from warping away from the wafer.

4,271,578
METHOD AND APPARATUS FOR REMOVING A SLEWING RING FROM A PEDESTAL MOUNTED CRANE

Frank M. Robinson, Hedon, and Norman F. Taylor, Burstwick, both of England, assignors to Priestman Brothers Limited, Hull, England

Filed Oct. 10, 1979, Ser. No. 83,328
Claims priority, application United Kingdom, Nov. 6, 1978, 43265/78
Int. Cl.[3] B66D *23/84;* B23P *19/04*
U.S. Cl. 29—426.3 10 Claims



1. A method of removing a slewing ring from a pedestal-mounted crane, the method comprising the steps of positioning

a pair of elongate guide members along opposite sides of said slewing ring and substantially parallel to the plane of said slewing ring, positioning a carriage on said elongate guide members, positioning a plurality of jacks between said crane and said pedestal, extending said jacks to raise said crane relative to said pedestal, moving said carriage to a position beneath said crane, positioning said slewing ring on said carriage, and withdrawing said carriage together with said slewing ring thereon from beneath said crane along said guide members.

4,271,579

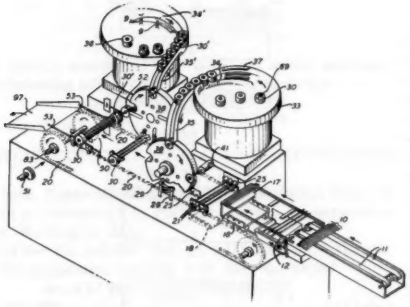
PAINT ROLLER CAGE ASSEMBLY APPARATUS AND METHOD

Walter McDonald, Landing, and Norbert J. Seitel, Gillette, both of N.J., assignors to Charles E. Green & Son, Inc., Newark, N.J.

Division of Ser. No. 874,524, Feb. 2, 1978, Pat. No. 4,170,289. This application May 17, 1979, Ser. No. 39,795

Int. Cl.³ B23P *19/00, 21/00*

U.S. Cl. 29—430 **10 Claims**



4. A method of assembling paint roller cages in which end caps are oriented to receive cage wires in sockets on the end caps comprising,

a. delivering end caps to end cap pockets on a rotatable turret at a receiving station,

b. rotating the turret to an end cap positioning station,

c. twisting the end cap on the turret at the cap positioning station in one direction,

d. reverse twisting the end cap in the turret at the cap positioning station in the opposite direction to a position where it will be in registration with a cluster of cage wires when the turret is rotated to the cap applying station,

e. rotating the turret to the cap applying station,

f. pushing the end cap out of the cap receiving pocket in the turret into engagement with the pre-positioned cage wire.

5. A cage assembly apparatus comprising:

a. a pair of conveyors operably mounted in parallelism with each other,

b. a pair of groups of pivotably associated links mounted on the conveyors,

c. means to intermittently drive the conveyors,

d. the links in each group normally disposed in line with each other,

e. the links in each group pivotable to dispose the end links in each group in engagement with each other,

f. a cage wire seat on each link of each pair, and defining means to hold a plurality of cage wires on each group of links in general parallelism with each other,

g. cage wire latches pivotably mounted on each of the links,

h. means to pivot the cage wire latches to hold cage wires on the seats when the normally linearly disposed links pivot to dispose the end links into engagement with each other,

i. means to pivot the links to dispose the end links of each group of links into engagement with each other, whereby cage wires on the seats are positioned to receive end caps, and

j. first means to deliver a first end cap with cage wire holes in registration with one end of the cage wires on the links,

k. means to apply the first end cap to one end of the cage wires on the links.

4,271,580

METHOD OF FORMING WIRE SUPPORT FRAME MEMBER

James F. King, Winston-Salem, and Gilbert L. Horton, Kernersville, both of N.C., assignors to Hanes Corporation, Winston-Salem, N.C.

Filed Jun. 18, 1979, Ser. No. 49,461

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—447 **13 Claims**

1. The method of fixedly securing a plastic end cap to an end portion of a wire frame member having a desired arcuate configuration comprising the steps of removing selected portions from a wire frame member end portion to define a shoulder and a reduced tip portion having a predetermined length selectively positioning an end cap, having an opening of rectangular cross-sectional configuration generally conforming to the rectangular cross-sectional configuration of the reduced tip portion, for snugly receiving the reduced tip portion, and adhering the end cap upon the reduced tip portion.

12. The method of forming a reinforcement frame for use in cups of brassieres and the like comprising the steps of bending a length of resilient wire having a generally rectangular cross-section into a generally U-shaped configuration, selectively positioning a protective plastic end cap, having an opening therein for snugly receiving a wire end portion, upon each end of the wire member, and adhering the end caps to the wire frame.

4,271,581

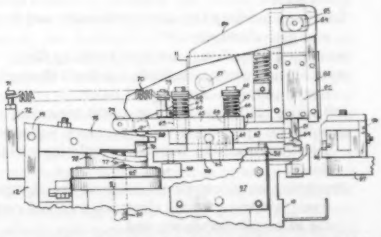
APPARATUS FOR INSERTING MULTIPLE TERMINALS INTO A HOLDER

Robert Eitzinger, Lincolnshire, Ill., assignor to Mid-West Automation, Inc., Wheeling, Ill.

Filed Sep. 24, 1979, Ser. No. 78,239

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—564.6 **8 Claims**



1. An apparatus for inserting multiple terminals into a holder

that has been indexed in a terminal receiving position comprising

(a) a driving power source for the apparatus,

(b) a first means for feeding a predetermine length of a terminal strip into the apparatus through a hollow track lying in a substantially horizontal plane,

(c) means driven by said power source for actuating said first means,

(d) second means for clamping said predetermined length of the terminal strip in a designated work station provided by the apparatus,

(e) means driven by said power source for moving said second means in a substantially vertical plane,

(f) third means for severing a predetermined number of terminals from the terminal strip positioned within the designated work station,

(g) means driven by said power source for momentarily moving said third means in a substantially vertical plane,

(h) a fourth means for projecting the severed terminals out of the designated work station and into the indexed holder,

(i) means driven by said power source for moving said fourth means in a lateral direction transversely of the horizontal plane of the hollow track,

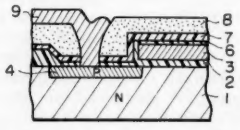
(j) means for returning said first, second, third and fourth means to their original positions relative to the horizontal track, the designated work station, and the indexed holder after they have been actuated and moved by their respective driven means.

4,271,582

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

Kazunari Shirai; Izumi Tanaka; Shinpei Tanaka, and Keiji Nishimoto, all of Yokohama, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 29, 1979, Ser. No. 70,610
Claims priority, application Japan, Aug. 31, 1978, 53-106761
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **12 Claims**



1. A process for producing a semiconductor device comprising,

a semiconductor substrate, on which a source region and a drain region are formed with a gate region positioned between said source and drain regions,

a gate insulating film formed on said gate region, and

a gate electrode formed on said gate insulating film, said process comprising the steps of:

forming said gate insulating film;

forming said gate electrode on said gate insulating film;

forming said source and drain regions in such a manner that said gate electrode is positioned between these regions;

forming a masking film over said source and drain regions and gate electrode;

forming a glass layer over said masking film;

opening precursory electrode windows through predetermined portions of said glass layer;

subjecting said glass layer to a heat treatment;

opening an aperture at the precursory windows through said masking film, thereby completing electrode windows;

depositing an electrode material on the so opened electrode windows, which electrode material extends from the electrode windows; and

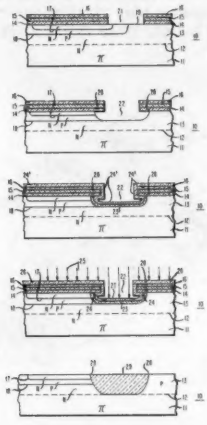
subjecting said semiconductor substrate to a heat treatment under a hydrogen atmosphere subsequent to said heat treatment step of the glass layer and prior to said depositing step of the electrode material.

4,271,583

FABRICATION OF SEMICONDUCTOR DEVICES HAVING PLANAR RECESSED OXIDE ISOLATION REGION

Dawon Kahng, Bridgewater Township, Somerset County, and Theodore A. Shankoff, Mendham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1980, Ser. No. 128,841
Int. Cl.³ H01L *21/302*
U.S. Cl. 29—571 **11 Claims**



1. A method for fabricating semiconductor circuits in a semiconductive silicon body (**10**) comprising a process for forming an oxide isolation region (**29**) in the body (**10**) by thermal oxide growth in a recess region (**22**) in said body (**10**) while the rate of such growth on a sidewall of said recess region (**22**), as compared with growth on the bottom of said recess region (**22**), is reduced by a mask (**24**) on said sidewall, characterized in that said sidewall is coated with a thermally grown silicon dioxide layer (**23**) on which said mask (**24**) is formed prior to the oxide growth in the recess region (**22**), said recess region having been formed by substantially isotropic etching of a restricted portion of an originally substantially planar surface of the body (**10**).

4,271,584

METHOD OF ATTACHING LED CHIP TO A HEADER

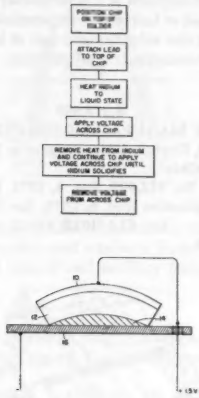
Guenther Zaeschmar, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,811
Int. Cl.³ H01L *21/479*
U.S. Cl. 29—584 **4 Claims**

1. In a method of fabricating a light emitting diode (LED) including a LED chip and a header for supporting said chip, wherein said LED chip is soldered to a header for supporting said chip by means of a soft solder, the improvement comprising the steps of:

attaching a lead to top of chip, heating said solder to a liquid state, applying a voltage across said chip to reconfigure

said LED chip into a stress free bent configuration, discontinue heating said solder while continuing to apply


POSITION CHIP ON TOP OF SOLDER
ATTACH LEAD TO TOP OF CHIP
HEAT INDIUM TO LIQUID STATE
APPLY VOLTAGE ACROSS CHIP
REMOVE HEAT FROM INDIUM AND CONTINUE TO APPLY VOLTAGE ACROSS CHIP UNTIL INDIUM SOLIDIFIES
REMOVE VOLTAGE FROM ACROSS CHIP

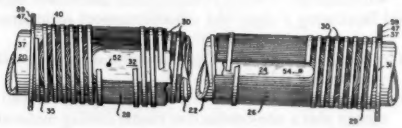
said voltage across said chip until said solder solidified, and removing said voltage from across said chip.

4,271,585

METHOD OF CONSTRUCTING A SUPERCONDUCTING MAGNET

John A. Satti, Naperville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 865,345, Dec. 28, 1977, Pat. No. 4,189,693.
This application Aug. 22, 1979, Ser. No. 68,807
Int. Cl.[3] H01V *11/00*; H01F *7/22*
U.S. Cl. 29—599 **4 Claims**



1. A method of constructing a superconducting magnet on a cylindrical bore tube having an outer surface, the method comprising the steps of:

a. forming a twisted taped cable of rectangular cross-section from an odd number of strands of matrix superconducting wire wrapped in an open spiral of a glass tape impregnated with epoxy resin;

b. wrapping the bore tube with a strip of thermally conductive material in an open spiral;

c. affixing a first pair of saddle-shaped spacers on the surface of the bore tube and the thermally conductive material;

d. placing a first pair of saddle-shaped windings about the spacers on the surface of the bore tube by wrapping the cable with a short dimension of the rectangular cross-section against the surface of the bore tube and the thermally conductive material;

e. placing spacers in and around the windings to make a cylindrical assembly;

f. clamping the cylindrical assembly in a first compression fixture;

g. heating the clamped cylindrical assembly to cure the epoxy resin;

h. removing the first compression fixture;

i. connecting the strands of the cable to a terminal to place the strands in series; and

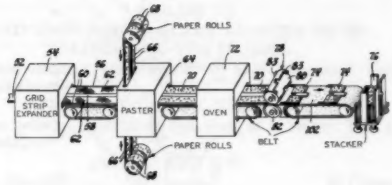
j. connecting a pair of external leads to the terminal to establish an external connection.

4,271,586

METHOD OF MAKING BATTERY PLATES

Charles P. McCartney, Jr., Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1979, Ser. No. 69,894
Int. Cl.[3] H01M *4/74*
U.S. Cl. 29—623.5 **4 Claims**



1. In the method of making battery plates comprising the principal steps of: (1) forming a length of battery grid-making stock, said stock comprising two grid-wire networks expanded laterally outwardly from an unexpanded strip at the longitudinal center of said length and two unexpanded strips at the outermost edges of said networks defining the lateral edges of said stock, said center and edge strips subsequently defining opposite borders of said plates; (2) filling said networks with battery plate reactant; and (3) cutting said filled stock into individual battery plates, the improvement comprising: severing said stock along spaced serpentine cuts transverse its length such as to segment said stock into a plurality of plates, said cuts forming at least two lugs on each plate projecting outboard said networks, the lugs for each plate being aligned with the borders and projecting from that plate's borders in the longitudinal direction of said stock and being carved out from the borders of the next adjacent plate severed from said stock.

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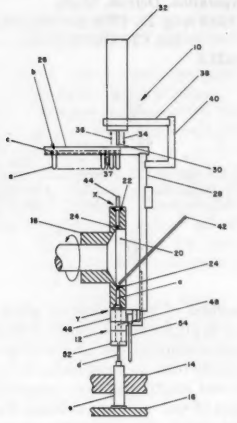
APPARATUS FOR CONTINUOUSLY INVERTING SHEATHS AND PLACING THE SHEATHS ONTO ARTICLES

Walter Shields, 181-41 Henley Rd., Jamaica, N.Y. 11432

Filed Jul. 12, 1979, Ser. No. 56,883
Int. Cl.[3] B23Q *7/06*
U.S. Cl. 29—809 **3 Claims**

1. Apparatus for continuously inverting sheaths having vertically upwardly oriented open ends and annular shoulders around the open ends and for placing the sheaths onto the articles, comprising a rotationally indexing wheel having a concavity at a side surface thereof, a plurality of tapered depressions provided around the outer periphery of the wheel equally spaced from each other and a plurality of holes radially inwardly extending from the tapered depressions to said concavity for receiving therein the sheaths at a first station and transmitting the same to a second station at which the orientation of the sheaths is entirely inverted, the second station being positioned just above a location to which the articles are consecutively indexed, the shoulders of the sheaths being located in the tapered depressions when the sheaths are fully inserted into the holes, means for continuously supplyingeach of the sheaths in an upright position in alignment with the respective hole to which the respective sheath is fed, said means for supplying the sheaths consisting essentially of a pair of guide rails to support the annular shoulders of the sheaths and a pusher to intermittently push the sheaths in order to move the sheaths continuously to the desired upright position, means for transporting the sheaths supported by the guide rails to said holes of said wheel, said means for transporting the sheaths including an air cylinder having a piston therein operated by

air pressure and a piston rod connected to the piston, said air cylinder being actuable such that when operated, the piston rod enters the sheath supported in position by the guide rails and forces the sheath downwardly through said guide rails and inserting the sheath into the hole, and air ejection means for releasing the sheaths from the holes at the second station, an



end of the air ejection means being located within said concavity at the second station and the air ejection means being intermittently actuable to eject air from the end when the holes are positioned at the second station, whereby the sheaths at the second station are consecutively released from the holes and are placed over the articles consecutively indexed to be located just below the second station.

4,271,588

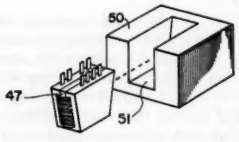
PROCESS OF MANUFACTURING A ENCAPSULATED HYBRID CIRCUIT ASSEMBLY

Robert A. Nowak, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 859,424, Dec. 12, 1977. This application Jun. 18, 1979, Ser. No. 49,377

Int. Cl.[3] H01R *43/00*

U.S. Cl. 29—827 **3 Claims**



1. In the manufacture of a circuit assembly a method of manufacture comprising the steps of:

(a) providing a plurality of nonconducting substrates having conducting layers comprising a plurality of connecting pads and artwork for attaching discrete components thereto forming an integral part thereof;

(b) providing at least one discrete component and fixedly attaching said at least one discrete component to said artwork;

(c) providing a lead frame comprising external leads and at least one interconnecting lead, and fixedly attaching said external leads to said substrates for transmission of signals into and out of the assembly, and attaching said at least one interconnecting lead between at least one of said substrates and at least one other of said substrates;

(d) encapsulating said substrates, said at least one discrete component, and at least portions of said lead frame in encapsulating material in a manner that allows said substrates to be disposed in a noncoplanar configuration; and

(e) bending said at least one interconnecting lead to dispose said at least one substrate and said at least one other substrate in a noncoplanar configuration.

4,271,589

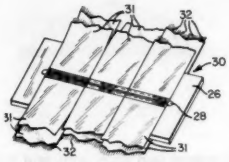
METHOD OF MANUFACTURING CHARGE PLATES

James L. Gudorf, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 912,495, Jun. 5, 1978, Pat. No. 4,195,304. This application Aug. 6, 1979, Ser. No. 64,236

Int. Cl.[3] H01R *43/00*

U.S. Cl. 29—878 **10 Claims**



1. Method of producing a charge plate for an ink jet printer comprising the steps of:

(a) fabricating a master plate including a series of regularly spaced recesses,

(b) casting an elastomeric molding material against said master plate and into said recesses, thereby producing an elastomer mold comprising a base and a series of pins projecting outwardly from said base,

(c) separating said mold from said master,

(d) producing a series of electrodes by coating said pins with a transferrable coating of electrically conductive material,

(e) fabricating a rigid and durable support plate structure having a medially extending elongated slot,

(f) placing said support plate against said mold with said slot surrounding said pins,

(g) casting into said slot and against said mold and said coated pins a non-conductive plastic casting material of a type which is curably adherent to said support plate and said electrodes,

(h) curing said plastic casting material to define a plastic charge plate structure having a series of regularly spaced charging tunnels and a charging electrode adhered to and supported by the walls of each tunnel,

(i) separating said charge plate structure from said mold, and

(j) attaching electrical lead means to said electrodes.

4,271,590

DRY SHAVING APPARATUS

Rolf Ernst, Glashütten, and Roland Ullmann, Hausen, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,783

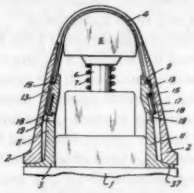
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843657

Int. Cl.[3] B26B *19/04*

U.S. Cl. 30—43.92 **14 Claims**

1. A dry shaving apparatus, comprising a shearing foil; a blade member which is reciprocable and cooperates with said shearing foil; a pressure spring arranged to urge said blade member toward said shearing foil, said blade member and said pressure spring extending in a first direction; a shearing head frame; an elongated auxiliary frame insertable into said shearing head frame and having ends spaced from one another in a direction of elongation, said auxiliary frame mounting said

shearing foil so that the latter is convex and having at least one longitudinal side at which it is fixed to said shearing foil, said



auxiliary frame being resiliently yieldable in said first direction; and means for arresting said auxiliary frame in said shearing head frame at said ends of said auxiliary frame.

4,271,591

PIPE-CUTTER WITH INTERCHANGEABLE CHAINS

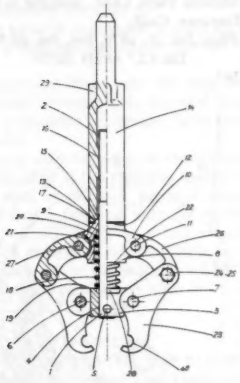
Jean L. C. Aubriot, Damery, France, assignor to Virax, Epernay, France

Filed Jun. 7, 1979, Ser. No. 46,209

Claims priority, application France, Jun. 9, 1978, 78 17722

Int. Cl.³ B23D *21/06*; B26B *27/00*

U.S. Cl. 30—100 **3 Claims**



1. A chain pipe-cutter kit comprising a set of selectively-interchangeable constriction chains having two free ends and including a rotation-cutting chain and a pressure-cutting chain, and a chain tensioning system for operative actuation of any selected one of said chains in conjunction with a pipe to be cut by chain constriction, said chain tensioning system comprising:

a generally cylindrical rod having an outer threaded portion at one end thereof and a backing support member at its other end;

a slider movable along said rod between said threaded portion and backing support member thereof;

four rockers hinged to said support member at a medial point of each rocker;

two links hinged on the one hand to one end of said rockers and on the other hand to said slider;

hooks formed at the other end of said rockers and facing inwardly opposite one another, said hooks being designed for engaging firmly said two free ends of any selected one of said chains;

a rocker control rotary handle having an open end bore formed therein to house the threaded portion of said cylindrical rod, said bore having an inner threaded portion in mesh with said outer threaded portion and an open end adjacent said slider, said handle having at a part thereof remote from said slider four bosses in cruciform distribution;

a compression coil spring fitted around said cylindrical rod and extending between said backing support member and said slider to urge the same apart, and

a handle actuator device designed for removable engagement with said handle to rotate the same, and comprising operative means adapted to clutch with said cruciform bosses, and a hand-actuated member cooperating with said operative means to drive said bosses in rotation.

4,271,592

HAND TOOL WITH A BLADE ADAPTED TO BE FOLDED INTO THE HANDLE

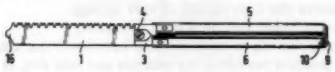
Hans-Gerd Höptner, Güldenwerth 62, 5630 Remscheid, Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118 724

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904279

Int. Cl.³ B26B *5/00*

U.S. Cl. 30—153 **14 Claims**



1. A hand tool comprising a tool portion, a handle portion and a tool retaining means for connecting the tool portion to the handle portion, the handle portion includes two U-shaped members of equal length, each of the U-shaped members includes a base portion and two arms interconnected by the base portion, a first pivot means for pivotally connecting free ends of the two arms of one of the U-shaped members to the retaining means, second pivot means having a pivot axis perpendicular to the pivot axis of the first pivot means for pivotally connecting the two arms of the other of the U-shaped member to the retaining means, the U-shaped members being pivotable about said pivot means so as to enable the members to form a protective housing enclosing the tool portion, characterized in that the first pivot means and second pivot means are offset with respect to each other in a longitudinal direction of the hand tool by a distance approximately corresponding to a thickness of a base portion of one of the U-shaped members.

4,271,593

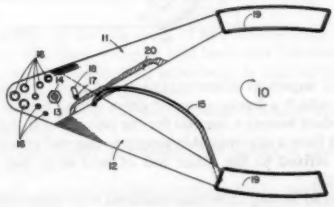
WIRE CUTTER

Samuel C. Smith, 210 Hartman Rd., Newton Centre, Mass. 02159

Filed Jun. 12, 1979, Ser. No. 47,791

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—233 **2 Claims**



1. A wire cutter for cutting wire smoothly and without burrs comprising:

a pair of pivotally connected jaws, each of said jaws having an operating handle;

a portion of one jaw overlapping a portion of the other, said overlapping portions having a flat blade-shaped structure;

at least one hole through the overlapping portion of each of said jaws spaced forward of and apart from said pivotal connection, the hole on the outer surface of one of said jaws being countersunk;

a pin press-fitted in one of said blade-shaped jaws spaced rearward of and apart from said pivotal connection;

an arcuate slot in the other of said blade-shaped jaws spaced rearward of and apart from said pivotal connection to receive said pin;

said pin and said slot defining the range of the pivotal movement of said blade-shaped jaws, such that when said pin is stopped at one end of said slot, said holes in each of said blades overlap in complete alignment and when said pin is at the other end of said slot, said holes are in complete misalignment;

a handle extending rearward from each of said blade-shaped jaws;

a curved spring attached to one of said handles and extending toward the overlapping portions to the other of said handles;

a groove cut into the interior side of the other of said handles to receive the curved end of said spring;

said groove being coated with a lubricant;

said spring serving to maintain said handles in the maximum open position permitted by said pin and said slot, at which position said holes in said jaw blades coincide in alignment, and after closing of said handles and release of pressure returning said handles to said maximum open position.

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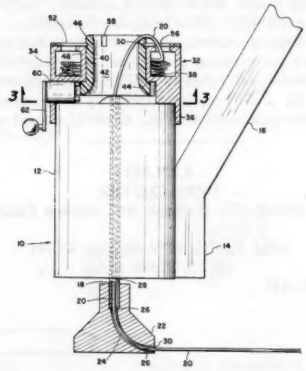
FILAMENT-TYPE WEED-GRASS TRIMMER

Lauren G. Kilmer, 1927 E. 35th Pl., Tulsa, Okla. 74105

Continuation of Ser. No. 771,400, Feb. 23, 1977, abandoned.
This application Nov. 7, 1978, Ser. No. 958,518
Int. Cl.[3] A01D *50/00*
U.S. Cl. 30—276 **4 Claims**



1. An improved filament-type weed-grass trimmer of the type in which a frame mounted drive means rotates a hollow output shaft having a conduit for the passage of filament therethrough from a non-rotatable supply to one end of said shaft, to a head affixed to the other end of said shaft and rotatable therewith,

said head having an arcuate enclosed bore therethrough, one end of said bore substantially aligned and in open communication with the conduit of the hollow output shaft and the other end of said bore projecting outwardly from the head;

means for positively feeding defined increments of filament from said supply through said conduit in said hollow output shaft through said bore and thence outward of said head sufficient distance for trimming,

said means for positively feeding defined increments of filament fed to said head comprising:

an annular cup mounted to the end of the fixed drive means opposite the head for holding a supply of filaments;

a distributor rotatably mounted to the center of the annular cup, and having a central opening therethrough in substantial alignment and in open communication with said one end of the hollow output shaft, and further having at least one groove in the head of said distributor for receiving and guiding filament from the annular cup to the distributor through said conduit in said hollow output shaft through said bore and thence outward of said head; and

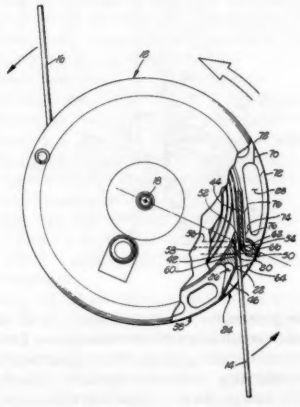
means for rotating the distributor to allow positive feed of the defined increment of filament passing from the annular cup to the distributor.

4,271,595

HOUSING AND CUTTING LINE ASSEMBLY FOR VEGETATION CUTTING APPARATUS

Jon A. Rahe, Mission Viejo, Calif., assignor to Hawaiian Motor Company, Torrance, Calif.

Filed Jul. 26, 1979, Ser. No. 60,938
Int. Cl.[3] A01D *50/00*
U.S. Cl. 30—347 **16 Claims**



1. A housing and cutting line assembly for a vegetation cutting apparatus, comprising:

a housing rotatable about an axis;

at least one line mounted within said housing to extend exteriorly of said housing and contact and cut vegetation by rapid circular movement exteriorly of said housing during rotation of said housing; and

a metallic line guide attached to said housing for guiding the extending of said line exteriorly of said housing during said rotation by contact with said line and for conducting heat generated in said line away from said line, said line guide having,

a leading side wall bearing surface for a portion of said line during said rotation, and

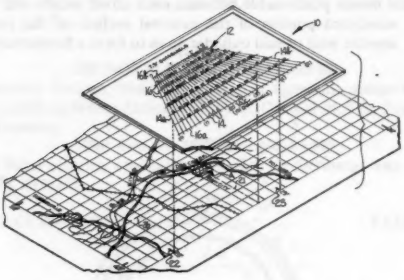
a trailing side wall bearing surface for said portion of said line during said rotation, said trailing side wall bearing surface having first and second linear surface portions angularly disposed with respect to one another.

4,271,596

INSTRUMENT AND METHOD FOR DETERMINING MAP COORDINATES

G. Robert Ganis, Rte. #1, Box 267, Harrisburg, Pa. 17111

Filed Nov. 6, 1979, Ser. No. 91,796
Int. Cl.[3] G01B 3/02
U.S. Cl. 33—1 C 3 Claims



1. A method for accurately determining a geographic coordinate of a location on a map having tick marks spaced along its borders which represent specific designated coordinates, said method comprising the steps of

projecting the location in question toward the border of the map along a direction parallel to one set of the coordinates,

placing a transparent sheet over the map, with the sheet having a variable length scale disposed thereon which is defined by a plurality of straight lines radiating from a common point,

aligning the scale with respect to the border of the map such that the outermost of the radiating lines are aligned with respective ones of the tick marks between which the projected location falls and with the border of the map extending perpendicularly to a line extending medially between such outermost radiating lines, and

reading the scale above the point at which the projected location intersects the aligned scale.

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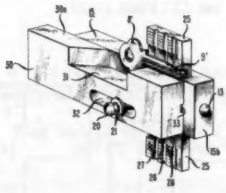
METHOD AND APPARATUS FOR MASTERKEYING

Louis F. Fortunato, 2510 Audrey Ter., Union, N.J. 07083

Filed Jul. 31, 1979, Ser. No. 62,360
Int. Cl.[3] G01B 3/00, 5/00
U.S. Cl. 33—174 F 7 Claims



1. A device to facilitate the arrangement of tumbler pins in a cylinder lock to correspond to selected bittings on one or more test keys which comprises in combination:

a calibrated plate having at least one elongated pin groove engraved thereon and a series of calibration lines disposed transversely to the direction of said elongated pin groove;

a key-supporting platform for said test keys disposed for slidable motion to and fro against face of said calibrated plate in a direction normal to the principal direction of said at least one pin groove and constructed to be secured in a selected position to register a preselected bitting of said test key with said pin groove.

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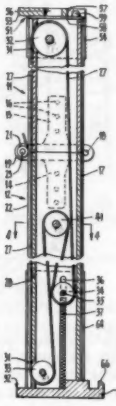
SURVEYING STAFFS

Donald G. Thomas, Dynnryne, Australia, assignor to Anson Engineering Pty. Ltd., Hobart, Australia

Filed Oct. 24, 1979, Ser. No. 88,107
Claims priority, application Australia, Nov. 5, 1978, PD6614
Int. Cl.[3] G01C 15/02, 15/06
U.S. Cl. 33—293 7 Claims



1. A levelling staff comprising:

an elongated hollow body formed of two elongated body sections each having respective front and rear walls and opposed side walls;

hinge means interconnecting adjacent ends of the body sections so that the body sections are pivotable relative to each other and movable from a folded position to an open position, said hinge means including hinge plates on each side wall of each body section, the hinge plates on each side wall having rearwardly extending portions interengaged by pivot pins and forwardly extending portions with substantially transversely movable latch pins to releasably interlock the hinge plates on each side when the body sections are in the open position;

a latch plate on the free end of one body section and a cooperating latch member on the free end of the other body section to releasably engage the latch plate when the sections are in the folded position;

a first roller mounted transversely within said body;

handle means coupled to said first roller to rotate said first roller;

brake means to releasably lock said first roller against rotation;

roller guides on the side walls of said hollow body;

a second transverse roller in said body and constrained for substantially longitudinal movement in said roller guides on the side walls of said body;

spring means to bias the second roller towards one end of said guides;

guide means at each end of the front surface of said hollow body; and

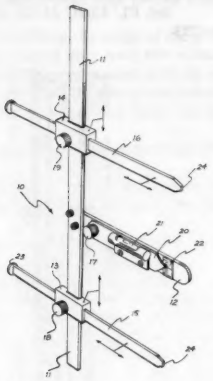
a movable, endless, flexible, graduated tape carried by said hollow body, an exposed part of said tape engaging with the front surface of said body, the tape passing over said guide means and into the interior of said body and engaged with the first and second rollers therein, said second roller maintaining a predetermined tension on said tape when the body sections are in the folded or open positions.

4,271,599

WHEEL CAMBER AND CASTOR MEASUREMENT APPARATUS

Frederick C. Pavitt, 2-54 Avoca St., Randwick, New South Wales 2031, Australia

Filed Apr. 23, 1979, Ser. No. 32,592
Int. Cl.³ G01B 5/255
U.S. Cl. 33—336 **4 Claims**



1. Apparatus adapted to be hand held by an operator for use in measuring the camber and castor of a motor vehicle wheel comprising: a main frame; two parallel generally co-extensive rods extending from and at spaced locations on the main frame so as to be located in use within a common generally vertical plane; clamp means selectively slidably attaching the rods to the main frame so that said rods are movable along their longitudinal axes through the clamp means and in a direction normal to the longitudinal axes of the rods so that the rods are movable relative to each other to adjust the spacing between the rods; abutment means on each rod at adjacent ends of the rods, said abutment means each having a planar end surface normal to the axes of the rods so that in use the operator positions the abutment means to engage a suspension member of the vehicle; and calibrated means mounted on the main frame to determine the inclination of the rods to the horizontal when the rods are abutting a portion of the vehicle from which the castor or camber may be determined, wherein said calibration means includes an arm fixed to said frame and extending generally within said plane defined by said rods, and a spirit level means pivotally attached to said arm to thereby enable measurement of the inclination thereof and therefore the inclination of said rods.

4,271,600

APPARATUS FOR DRYING FLAT ARTICLES OF POROUS MATERIAL UNDER VACUUM

Jean-Pierre Dubourg, Segny Gex, France, assignor to Patpan Inc., Panama

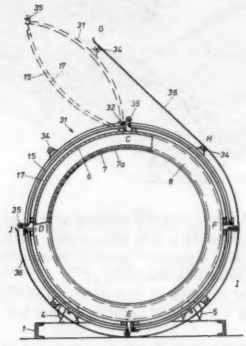
Filed Aug. 28, 1978, Ser. No. 937,589
Claims priority, application Switzerland, Sep. 2, 1977, 10706/77; United Kingdom, Jan. 26, 1978, 3132/78
Int. Cl.³ F26B 13/30
U.S. Cl. 34—92 **14 Claims**

1. An apparatus for drying flat articles of porous material, said apparatus comprising

a rotatably mounted cylinder having an outer annular wall, an inner annular wall, and annular end plates connecting the opposite ends of the outer annular wall and the inner annular wall so as to form a closed annular space therebetween, said annular space being capable of containing a heated fluid for heating the external surface of the outer annular wall,

at least one cover means capable of wrapping around an associated portion of the external surface of the outer annular wall of said cylinder when said cylinder is rotated so as to cover any flat, porous articles located on said associated portion, each cover means comprising a flexible, nonextensible, fluid-tight diaphragm having a porous cushion layer on the surface thereof which will face the associated portion of the external surface of the outer annular wall of said cylinder when wrapped therearound,

seal means positionable between each cover means and the associated portion of the external surface of the outer annular wall of said cylinder so as to form a hermetically-



sealed space between each cover means and the associated portion of the external surface of the outer annular wall of said cylinder when each cover means is wrapped therearound,

at least one orifice extending through said outer annular wall of said cylinder to communicate with each hermetically-sealed space, and

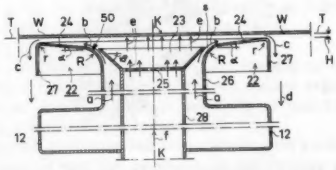
means connected to each said orifice to create a vacuum therein and thus a vacuum in each hermetically-sealed space formed when each cover means is wrapped around the associated external surface of the outer annular wall of said cylinder.

4,271,601

WEB DRYER OPERATING ON THE AIR FLOAT PRINCIPLE

Vesa Koponen, and Charles Stengard, both of Turku, Finland, assignors to Valmet Oy, Finland

Filed Sep. 11, 1979, Ser. No. 74,440
Claims priority, application Finland, Sep. 11, 1979, 782775
Int. Cl.³ F26B 13/20
U.S. Cl. 34—156 **6 Claims**



1. In apparatus for drying a web according to the air supporting principle including a plurality of nozzle members from which a gaseous drying fluid is directed into contiguity with the web to be dried and wherein the web is supported by said gaseous drying fluid, and wherein said nozzle members define a carrying surface along which the gaseous drying fluid is directed to produce the web supporting effect, the improve-

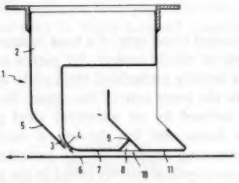
ment comprising: a plurality of nozzle members successively located one after the other both in and transverse to the direction of travel of the web, each of said nozzle members including means defining a substantially annular slit and a carrying surface associated with said annular slit for directing gaseous drying fluid substantially contiguous with said carrying surface in a substantially radial flow field relative to said annular slit and in a direction substantially parallel to the web.

4,271,602

AIR NOZZLE FOR A JET DRYER

Friedbert Grolms, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,589
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836103
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—160 **9 Claims**



1. In an air nozzle of the slot nozzle type for a jet dryer for the drying of moving material webs, having a nozzle slot extending transverse to the moving material web during use and having an elongated nozzle lip which together with the material web moving substantially parallel thereunder during use forms, over a considerable length, the boundary of a channel for the drying air, the improvement wherein the elongated nozzle lip has a planar portion and at least one stabilizing zone for the drying air which extends continuously over the entire width of the nozzle and which interrupts the planarity of the planar portion of the nozzle lip to form first and second planar nozzle surfaces on either side thereof, wherein the nozzle slot is configured to direct drying air unidirectionally towards the planar nozzle surfaces and in counter-current to the movement of the web and wherein each stabilizing zone includes equalizing openings for drawing off a portion of the drying air, so spaced from the nozzle slot that stabilization of the drying air flow is assured with widely varying drying air velocities.

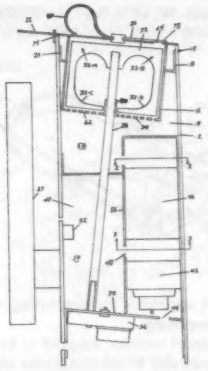
4,271,603

COFFEE ROASTER

Thomas J. Moore, III, 8 Royal Crest Dr., Apt. 7, Nashua, N.H. 03060

Filed Aug. 17, 1979, Ser. No. 67,279
Int. Cl.³ F26B *9/08*
U.S. Cl. 34—181 **9 Claims**

1. An apparatus for roasting coffee beans comprising
a roasting chamber having at least one perforate wall,
means for creating a continuous heated gaseous flow through said perforate wall into said roasting chamber, said means having
an exit orifice in gaseous communication with said roasting chamber for allowing said gaseous flow to exit outside of said apparatus,
means external of the roasting chamber for variably controlling the rate of flow of said heated gas through said roasting chamber, said external control means comprising a cover, said cover mounting a manually movable member for blocking at least a portion of said exit orifice,



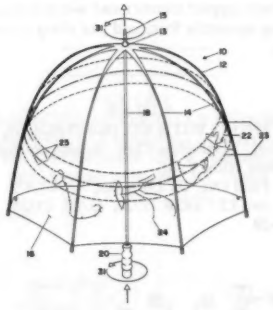
whereby said gas flow through said roasting chamber can be manually controlled.

4,271,604

PORTABLE PLANETARIUM

Luther B. Rowsey, Jr., P.O. Box 666, Friendswood, Tex. 77546

Filed Jun. 19, 1979, Ser. No. 48,822
Int. Cl.³ G09B *27/00*
U.S. Cl. 434—289 **11 Claims**

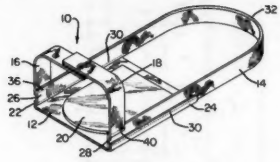


1. A portable planetarium for ascertaining the position of the sun, the moon, the planets and their satellites, and the stars throughout the year, comprising:
a frame having a configuration defined by a frustum of a cone with a substantially hemispherical cap attached thereon in order to accurately depict the full ecliptic path, the frustum of the cone and the hemispherical cap having inner dimensions such that a human using the planetarium may place his head within them in order to substantially simulate the perspective of the sky around the human;
a pole secured to the frame and aligned with the center axis of the frustum of the cone and extending through the top of the hemispherical cap;
a covering secured to the frame;
a plurality of markings selectively applied to the covering using the intersection of the pole and the top of the hemispherical cap of the frame as a point of reference representing Polaris, such that the location of the markings corresponds to the location of a plurality of the stars contained in the twelve zodiac constellations along the ecliptic.

4,271,605
FLEXIBLE FOOT SUPPORT

Edward Raczka, Aurora, Colo., assignor to Sea Gull, Denver, Colo.

Filed Jul. 16, 1979, Ser. No. 57,606
Int. Cl.[3] A43B *13/18, 1/10, 5/00;* A61F *5/00*
U.S. Cl. 36—28 11 Claims

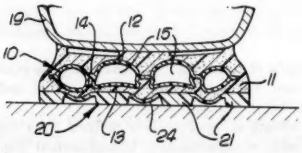


1. A foot support apparatus for supporting the metatarsal arch of the foot, comprising:
- a flexible base support member adapted to be positioned in underlying relationship to the metatarsal arch of the foot forward of the heel;
- a first elongated strap adapted to extend around the heel of the foot and having opposite end portions attached to opposite sides of said base support member;
- a second elongated strap adapted to extend across the upper portion of the foot at the metatarsal regions, said second elongated strap having opposite end portions attached on opposite sides of said base support member to one of said base support member and said first elongated strap; and
- a flexible pad secured to said base support member and adapted to underlie said metatarsal arch, a portion of one of said base support member and said first elongated strap extending upwardly from said pad along opposite sides of the foot.

4,271,606
SHOES WITH STUDDED SOLES

Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif.

Filed Oct. 15, 1979, Ser. No. 84,879
Int. Cl.[3] A43B *13/20, 13/04, 23/28*
U.S. Cl. 36—29 17 Claims

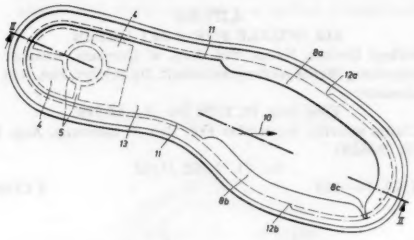


1. A structure adapted to form part of a shoe for receiving a person's foot, comprising a sealed sole member of elastomeric material providing a plurality of deformable intercommunicating chambers adapted to be inflated with a gaseous medium under pressure, an outer sole including a thin elastic deflectable web portion underlying and in load transmitting relation to said sole member and ground engaging studs spaced substantially from each other transversely of the outer sole and longitudinally of the outer sole and secured to and depending from said web portion, said web portion having a thickness of from about 0.015 inches to 0.080 inches, whereby said studs are shiftable with respect to each other and with respect to said deflectable web portion and sole member in transmitting loads between the person's foot and the ground engaged by said studs.

4,271,607
SOLE-UNIT FOR PROTECTIVE FOOTWEAR

Herbert Funck, Am Wasserbogen 43, 8032 Grafelfing-Lochham, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,795
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838522
Int. Cl.[3] A43B *13/12, 13/04*
U.S. Cl. 36—30 R 3 Claims

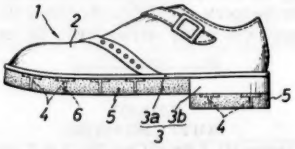


1. A prefabricated tread sole of a heat resistant plastic material, for example of nitrile rubber, for pierce-proof protective shoes, having a loosely embedded steel plate inlay in a region directly beneath the inner sole of the upper shoe, wherein: the sole region is defined by an uncoated steel plate inlay surrounded by a horizontal lip, having a horizontal groove formed as a mounting support of the periphery of the steel plate inlay, whose depth is exactly fitted in the heel and middle sole portion to the rim of the steel plate inlay and in the instep region and the sole tip of the lip being widened to the inside of the shoe and with the region of the sole tip having the groove deeper, so that the rim of the steel plate inlay is away from the bottom of the groove.

4,271,608
SPIKE SHOE

Yasushi Tomuro, No. 11-3 Tamagawa Denenchofu 2-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,542
Claims priority, application Japan, Aug. 16, 1978, 53-111464[U]
Int. Cl.[3] A43C *15/00;* A43B *5/00*
U.S. Cl. 36—61 4 Claims



1. A spike shoe comprising:
- a shoe upper;
- a bottom base on the bottom of said upper;
- a layer of resilient elastic material affixed to said bottom base;
- a bottom sheet covering the bottom of said layer, said bottom sheet having high wear resistance;
- a plurality of holes through said layer and said bottom sheet;
- a plurality of spike pins in said plurality of holes attached to said bottom base and extending toward said layer;
- each of said spike pins having a spike portion and a mounting portion, each said mounting portion being wider than its respective spike portion and being located in abutment with said bottom base and extending part way toward said bottom sheet;

said layer having a thickness sufficient to completely contain said spike pins when said layer is in an uncompressed condition;

each of said plurality of holes being closely fitted to a respective one of said spike pins;

said layer having a resilience sufficient to permit compression thereof under the weight of a human body which is effective to extend a substantial portion of said spike portions beyond said bottom sheet;

concave portions in the upper surface of said bottom sheet, one concave portion surrounding each of said holes and each having a contour which is effective to permit its respective mounting portion to approach said bottom sheet during compression of said layer without deforming said bottom sheet;

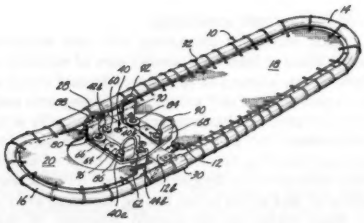
said layer being effective to increase its thickness sufficiently when said weight is removed to cover said spike pins, such increase in thickness being effective to remove mud and other matter from said spike portions as a result of the close fit between said holes and said spike pins and leave a bottom surface of said bottom sheet without protrusion of said spike portions therepast whereby said mud and other matter may be easily scraped therefrom.

4,271,609

SNOWSHOE

Fred C. Merrifield, 8746 Overlake Dr. W., Bellevue, Wash. 98004

Filed Nov. 20, 1979, Ser. No. 95,958
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—125 **6 Claims**



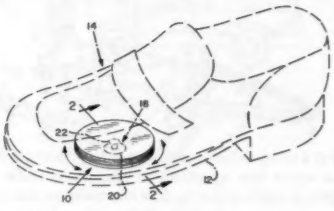
1. In a snowshoe having a rigid frame, said frame including a peripheral frame member and a rigid cross member, said cross member extending transversely across said snowshoe between side portions of said peripheral frame member and being positioned to underlie the ball of the wearer's foot, decking means secured to and enclosed by said peripheral frame member, said cross member including an upper plate portion having a substantially planar upper surface and an integral, downwardly turned portion depending from the forward edge of said upper plate portion, the improvement comprising a soleplate swingably mounted to said upper plate portion of said cross member for swinging movement between a substantially horizontal position wherein said soleplate bears flushly on said upper surface of said upper plate portion of said cross member and a forwardly tilted position wherein said soleplate is tilted forwardly about said forward edge of said cross member and disposed at an angle with respect to the upper surface thereof, spring means operating to urge said soleplate toward said forwardly tilted position, and strap binding means mounted on the upper surface of said soleplate for securing a wearer's boot to said soleplate.

4,271,610

ADHESIVELY ATTACHABLE ROTATABLE SOLE PLATE FOR SHOES

Buddy R. E. Parrent, 7207 N. Chicago, Portland, Oreg. 97203

Filed Jul. 12, 1979, Ser. No. 56,867
Int. Cl.³ A43B *23/00*
U.S. Cl. 36—136 **7 Claims**



1. A pivot for attachment to the sole of a shoe for assisting in pivoting the shoe relative to a floor while dancing, comprising:

(a) Plate means having transverse dimensions which are less than the dimensions of the sole of the shoe;

(b) Antifriction means associated with said plate means for providing a relatively low coefficient of friction between said shoe and the floor to facilitate rotation of the shoe relative to the floor, wherein said plate means and said antifriction means are integral and comprise a thin, cylindrical plate formed from a low-friction material; and

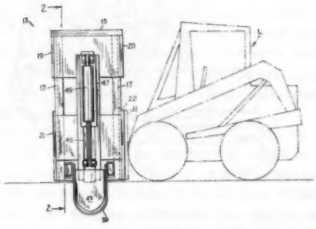
(c) Adhesive attachment means associated with said plate means for adhesively attaching said plate means to the shoe.

4,271,611

TRACTOR-MOUNTED LATERALLY UNDERCUTTING TRANSPLANT DIGGING MACHINE

William F. Paul, 2200 Sangamon Ave. E., Springfield, Ill. 62702

Filed Sep. 10, 1979, Ser. No. 74,094
Int. Cl.³ A01G *23/02*
U.S. Cl. 37—2 R **4 Claims**

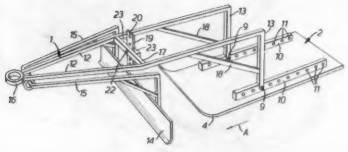


1. A between-row-movable and laterally-undercutting transplant digging machine comprising: a fore-aft-narrow frame adapted for mounting across the front or rear end of, and on the conventional accessory-attachment-receiving lift means of, a power-operated vehicle; a U-shaped under-cutter blade mounted in a rectilinear movable slide means; a guide means for said slide means; hydraulic-cylinder means for soil-penetratingly moving said blade by moving said slide means; pivotal means for swingably attaching said guide means to said frame; and hydraulic-cylinder means for swinging said guide means and thereby said blade downwardly and laterally into position for horizontal under-cutting blade movement by said first-mentioned hydraulic-cylinder means.

4,271,612
APPARATUS FOR PRODUCING SKI TRACKS FOR A SKI TRAIL

Knut O. Mellingen, Namsskogan, Norway, assignor to Komiv A/S, Namsskogan, Norway

Filed Feb. 5, 1980, Ser. No. 119,076
Claims priority, application Norway, Feb. 16, 1979, 790530
Int. Cl.³ E01H *4/00*
U.S. Cl. 37—10 **3 Claims**

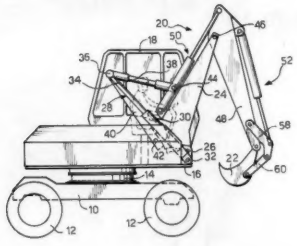


1. An apparatus for producing ski tracks for a ski trail, comprising a sliding/planing body with a flat sliding surface which curves upwardly at the forward section of said body, and spaced-apart track-forming members depending downwardly from said sliding surface, the track-forming members each comprising a bottom surface and two parallel side surfaces whose forward portions converge to form a plow portion while the bottom surface extends forward beneath said plow portion, and a drag frame pivotally attached by means of attachment members to the surface of the sliding/planing body at a distance rearward of its forward section, the axis of pivot for the frame running transversely of the direction of advancement for the sliding/planing body, characterized in that the bottom surface extends forward in full width to the tip of the plow part.

4,271,613
EXCAVATOR WITH ARTICULATED ARMS

Franca B. Ferrero, Rivoli, Italy, assignor to Brefer S.p.A., Grugliasco, Italy

Filed Oct. 10, 1979, Ser. No. 83,199
Int. Cl.³ E02F *3/62*
U.S. Cl. 37—103 **5 Claims**

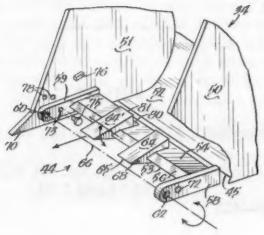


1. An excavator comprising:
a support truck or trolley;
a platform rotatably supported by the support trolley;
a first arm articulated at one end about a laterally extending pivot pin supported by the platform in the vicinity of a peripheral edge of the platform;
a second arm articulated at one end to the free end of the first arm;
an excavating member articulated to the free end of the second arm; and
means for controlling the angular movement of said first and second arms and of the excavating member about their respective articulations, said control means including means for pivoting the first arm about said lateral pivot pin comprising a jack articulated at one end to said platform at the front edge thereof adjacent to and directly below said lateral pivot pin of said first arm, two levers both articulated at one end to a common pivot pin to which is also articulated the other end of the jack, the opposite end of one of the two levers being articulated to the platform in the vicinity of said lateral pivot pin of the first arm, and the opposite end of the other of said two levers being articulated to the central portion of the first arm, the arrangement being such that when the platform is substantially horizontal and the first arm is raised to a maximum extent about said lateral pivot pin, the vertical projections of both said two levers are located inside the platform.

4,271,614
FLOATING SOIL FRACTURE TOOL

Allan J. Albrecht, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 22, 1979, Ser. No. 86,811
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—103 **5 Claims**



1. A soil fracture tool comprising:
(a) a bucket scoop for excavating soil, said scoop being pivoted about at least two parallel axes of rotation; and
(b) blade means, adapted to be received by said scoop along the digging edge of said scoop, for wedging into said soil to be excavated, said blade means being pivotally attached to said scoop, the pivot axis of said blade means being positioned in advance of the leading edge of said blade means relative to the digging direction of said scoop, the rotation of said scoop in soil having the effect of aligning said blade means in the general direction of digging whereby said scoop fractures said soil with the minimum necessary digging force, said blade means generally aligning tangentially to a circle whose center is at the axis of rotation of said scoop.

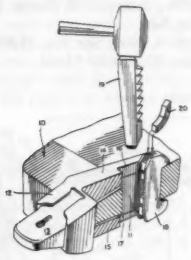
4,271,615
LOCKING DEVICE FOR EXCAVATING EQUIPMENT

Larren F. Jones, Beaverton, Oreg., assignor to ESCO Corporation, Portland, Oreg.

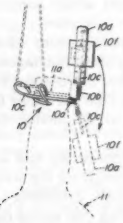
Filed Jan. 24, 1980, Ser. No. 115,135
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **11 Claims**

1. A lock for releasably securing a slip over adapter to the lip of an excavating machine wherein the lip and adapter have aligned openings receiving said lock, comprising: a C-shaped clamp member and a wedge member arranged in face-to-face contacting relation when installed in said aligned openings, the confronting face of said wedge member being equipped with serrations, said clamp member being vertically elongated to define an upper end, an arcuate passage in said clamp member

connecting said upper end with the contacting face of said clamp member, a resilient, arcuate lock mounted in said passage engaging said serrations and means in said passage for releasably mounting said lock therein.



4,271,616
CONTAINER SIGN HOLDER
Richard Boykin, 133-20 150th St., Jamaica, Queens, N.Y. 11430
Filed Oct. 17, 1978, Ser. No. 952,106
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—11 A **4 Claims**



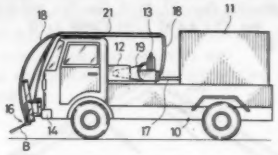
1. An apparatus for displaying signs on containers which comprises:

(a) a substantially round adjustable flexible material forming a substantially circular configuration where one end of said flexible material crosses the other and each end bends at an obtuse angle from the other end, terminating in an upward oval shape; and

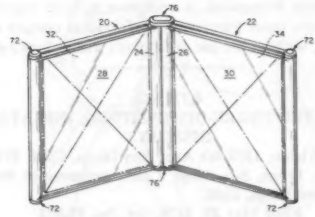
(b) a coiled double spring hinge where one coil encircles and is moveably affixed to said adjustable flexible material forming about a right angle with the other coil which encircles and is moveably affixed around a pin containing a rectangular plate which spring allows the plate to be rotated in a multiplicity of directions.

4,271,617
METHOD OF REMOVING SNOW FROM GROUND SURFACE
Daisuke Yoshizawa, 449 Sakuradani, Tottori-shi, Japan
Continuation-in-part of Ser. No. 921,608, Jul. 3, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,616
Claims priority, application Japan, Jul. 4, 1977, 52-80209; Dec. 28, 1978, 53-162827
Int. Cl.³ E01H *5/10*; **B05B** *9/02*
U.S. Cl. 37—195 **2 Claims**

1. A method of removing a layer of snow frozen into a form of an ice plate and lying on the ground in front of a travelling vehicle, comprising initially breaking up a part of said ice plate by discharging into said ice plate high velocity water from a plurality of nozzles mounted on and extending horizontally across the front width portion of the vehicle, in a forwards and downwards direction at an angle in a range of 45° to 60° with respect to a surface of the ground and at a pressure of not less than 140 Kg/cm², and then varying said angle to a range of 20° to 30°, while continuing to discharge said water into a gap between said ice plate and said ground surface to strip said ice plate from said surface of the ground.



4,271,618
FRAME CONSTRUCTION
George F. Lyman, N. Andover, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Jan. 31, 1979, Ser. No. 7,916
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **5 Claims**



1. The picture frame comprising:

a pair of transparent plastic frame members, each of said members having a vertical panel and vertically extending semi-cylindrical grooves along the vertical edges of the panel, and both grooves facing in the same direction,

each member also having a horizontal flange along the bottom edge of the panel and extending in the same direction as the open side of the grooves,

means assembling the two members in back to back relationship with the flanges on the bottom edges of the panels and the margins of the grooves engaging one another and spacing the panels slightly so that a pair of back to back pictures can be placed between the panels so as to be viewed through the panels and be supported on the flanges,

said semi-cylindrical grooves being aligned with one another so as to form hollow columns on each vertical side of the assembled frame,

a peg registering with, extending out and closing the lower end of each column, said pegs forming feet to support the frame on a horizontal surface,

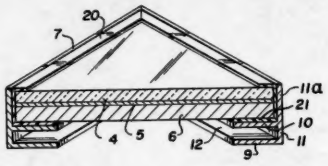
a second pair of frame members identical to the first recited pair, and secured together and having pegs like those in the first pair,

and means securing one of the pegs on one pair of frame members to a peg on the other pair enabling the assembled frames to pivot 360 degrees with respect to one another.

4,271,619
REUSABLE PICTURE FRAME

Erick Schmidt, Edmonton, Canada, assignor to General Systems Research Ltd., Edmonton, Canada

Continuation of Ser. No. 848,473, Nov. 4, 1977, abandoned. This application Dec. 27, 1979, Ser. No. 108,246
Int. Cl.[3] A47G *1/06;* G09F *1/10*
U.S. Cl. 40—154 10 Claims



1. A front-loading reusable picture frame for retaining a stack of elements to be framed comprising:

a rigid rectangular outer framework having means defining a forwardly facing seating and confining structure; and

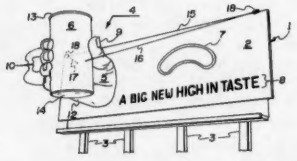
a rectangular inner framework comprising discrete side members, said side members having lower and upper inwardly projecting walls spaced apart from an upstanding wall, said walls forming a continuous inwardly open channel for receiving the stack of elements to be framed, whereby the side members may circumscribe the stack and hold the stack together;

said inner framework being frontally visible and snugly receivable in the seating and confining structure whereby the outer framework is operative to hold together and retain the inner framework by frictional contact therebetween, without the use of frontally visible locking means.

4,271,620
ANIMATED THREE-DIMENSIONAL INFLATABLE DISPLAYS

Robert K. Vicino, 1355 6th Ave., San Diego, Calif. 92101, and Calvin P. Owen, San Diego, Calif., assignors to Robert K. Vicino, San Diego, Calif.

Filed May 29, 1979, Ser. No. 43,092
Int. Cl.[3] G09F *19/02*
U.S. Cl. 40—406 9 Claims



1. A three-dimensional display suitable for outdoors, roadside advertising which comprises:

a billboard having a generally vertical, planar message-carrying surface;

a sculptured, collapsible envelope made of soft, pliable material in a plurality of sections sewn together, said sections being shaped and dimensioned to assume the outline of a predetermined item when said envelope is inflated;

said envelope having an opening and at least one air-bleeding hole;

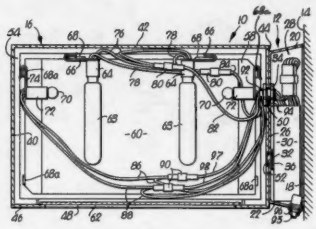
means for attaching a portion of said envelope surrounding said opening to said planar surface; and

means mounted on said billboard for continuously blowing ambient air into said envelope at a sufficient flow rate to keep said envelope inflated.

4,271,621
CONVERSION UNIT FOR ELECTRICAL LIGHT FIXTURE

Octavio G. Garcia, Prairie Village, Kans., and Peter A. Lambert, Excelsior Springs, Mo., assignors to Devine Lighting, Incorporated, Kansas City, Mo.

Filed Apr. 6, 1979, Ser. No. 27,873
Int. Cl.[3] G09F *13/04*
U.S. Cl. 40—570 2 Claims



1. In an illuminated exit sign construction of the type including an elongated, hollow support housing secured to a support surface, a rectangular, exit-indicating lens unit secured to the housing and having at least one lens panel and a primary electrical illuminator behind said panel, and means for coupling said primary illuminator to a source of standard voltage electricity, the improvement which comprises:

a battery;

means for mounting said battery wholly within said housing, the housing being directly connected to and carrying the lens unit on one face thereof and being secured directly to the support surface on the other face thereof;

a secondary electrical illuminator disposed within said lens unit;

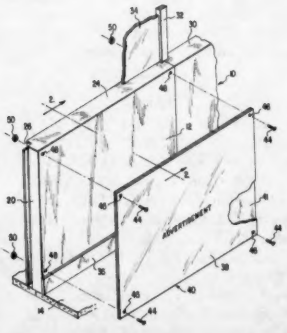
means electrically connecting said secondary illuminator to said battery for energizing the secondary illuminator; and

an internal, transversely extending support element on said lens unit, there being clip means on said secondary illuminator for connecting the latter to the support element.

4,271,622
DASHER BOARD FOR ICE SKATING RINKS AND METHOD OF MAKING SAME

Joseph R. Tippmann, 211 West St., New Haven, Ind. 46774, and Richard G. Daugherty, 2117 Reed Rd., Fort Wayne, Ind. 46805

Filed Aug. 20, 1979, Ser. No. 67,937
Int. Cl.[3] G09F *15/00*
U.S. Cl. 40—606 17 Claims



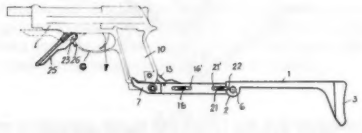
1. A dasher board for ice skating rinks comprising:

(a) a panel member having a substantially flat front portion and a flange member extending perpendicular therefrom for supporting said panel member in a vertical upright position on said rink,
(b) a window on said front portion of said panel,
(c) means for supporting indicia, said means located between said front portion of said panel and said window,
(d) means to secure said window to said panel member, and
(e) means secured to said front portion adjacent said rink for absorbing the impact of hockey pucks and the like.

4,271,623
PISTOL WITH STOCK EXTENSION AND AUXILIARY GRIP

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabbrica d'Armi P. Beretta S.p.A., Gardone V.T., Italy

Filed Jan. 29, 1979, Ser. No. 7,431
Claims priority, application Italy, Feb. 10, 1978, 6920/78[U]; Feb. 10, 1978, 5128 A/78
Int. Cl.[3] **F41C** *23/00*
U.S. Cl. 42—72 **7 Claims**

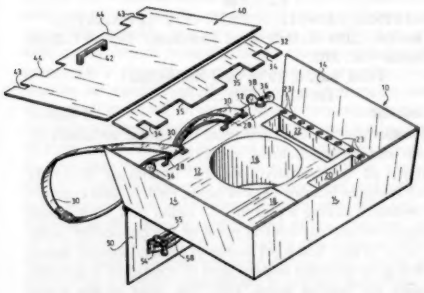


1. In a pistol including a body portion having a barrel, a stock and a handguard for protection of the trigger, the improvement comprising the combination of an elongated, foldable extension removably attached at one end thereof to the stock and extending in a direction opposite to that of the barrel of the pistol with the opposite end of said extension being T-shaped and an auxiliary handle lever pivotally coupled to the handguard, there being further included that is urged by an extendible spring biased piston for locking said auxiliary lever in a first position that is inclined downwardly with respect to said body portion, and in a second position that is substantially parallel and close to said body portion.

4,271,624
PORTABLE TACKLE AND BAIT HOLDER

Nicholas Peluso, 210 Belvedere Dr., Massapequa Park, N.Y. 11762

Filed Aug. 27, 1979, Ser. No. 70,284
Int. Cl.[3] **A01K** *97/04, 97/06*
U.S. Cl. 43—54.5 R **8 Claims**

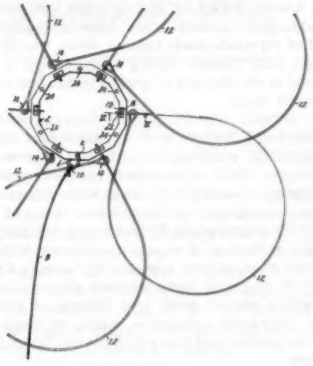


1. A portable tackle and bait holder for demountable securement on the gunwale of a boat, comprising:
a generally box-shaped housing having a substantially flat, horizontally-disposed base wall having four sides, from three of which upwardly extend three upstanding sidewalls which serve as windshields, said base wall having a multiplicity of depressions formed therein including at least one relatively deep depression which serves as a well for chum or live bait and a plurality of relatively shallow depressions which serve as recesses for hooks, lures, and bait, said base wall also having formed therein a plurality of knife slits and water drainage holes as well as a cutting board mounted on said base wall; and
means for demountably securing said housing to a gunwale of a boat.

4,271,625
OCEAN CRAB TRAP

Farley J. Archer, 11621 Holmes Point Dr., Kirkland, Wash. 98033

Filed Jul. 30, 1979, Ser. No. 61,802
Int. Cl.[3] **A01M** *23/34*
U.S. Cl. 43—87 **1 Claim**



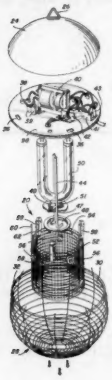
1. An ocean crab trap comprising:
a. a heavy, non-bouyant body member constituting a flat, open ring having means facilitating the securing of bait therein, and means for securing it to a fishing line for deposit in the water, whereby to sink and hold said bait against the ocean floor, and
b. a series of free-running nooses attached to said ring at uniformly spaced angular intervals thereabout and projecting generally radially outwardly from said ring, each of said nooses being formed of a strand of flexibly resilient material having an eye formed at one end thereof, said eye being engaged for free running movement about a standing portion of said strand, whereby due to the resilience of the strand the noose normally tends to remain wide open, the opposite end of said strand being secured to said ring, said ring being provided, at the position of each said noose strands, with a radial hole in the plane of said ring, and a cross bar spaced inwardly from said hole, the associated noose strand extending inwardly in closely fitting sliding relation through said hole, whereby said strand is held securely in radially extending relation to said ring, and being secured about said cross bar, whereby to prevent turning of said strand end about its axis.

4,271,626

INSECT ELECTROCUTION APPARATUS

Dennis L. Mulee, 304 Samoset La., Schaumburg, Ill. 60172; Arthur R. Erbach, Des Plaines, and Frank Ray, Schaumburg, both of Ill., assignors to Dennis L. Mulee, Schaumburg, Ill.

Filed Sep. 10, 1979, Ser. No. 73,675
Int. Cl.[3] A01M *1/22*; H01B *17/00*
U.S. Cl. 43—112 **22 Claims**



1. A spacing device for spacing a first wire mesh formed of perpendicularly crossed wires from a second wire mesh formed of perpendicularly crossed wires, which comprises:

a main body portion having a length that is substantially equal to the distance of spacing of the first mesh from the second mesh;

a pair of bosses extending axially from opposite ends of said main body portion, each of said bosses defining a slot adapted for receiving a wire from a respective wire mesh with the width of each boss being no greater than the distance between two adjacent wires extending in a direction perpendicular to the slot direction; and

means for retaining said first wire mesh and said second wire mesh in place with respect to said main body portion.

7. Insect electrocution apparatus including a first mesh grid formed of perpendicularly crossed electrically conductive wires and a second mesh grid formed of perpendicularly crossed electrically conductive wires; an insulative spacing device for spacing said first grid from said second grid, which comprises:

a main body portion having a length that is substantially equal to the distance of spacing of the first mesh grid from the second mesh grid;

a pair of bosses extending axially from opposite ends of said main body portion, each of said bosses defining a slot adapted for receiving a wire from a respective wire mesh with the width of each boss being no greater than the distance between two adjacent wires extending in a direction perpendicular to the slot direction; and

means for retaining said first mesh grid and said second mesh grid in place with respect to said main body portion.

13. Insect electrocution apparatus including a mesh grid formed of perpendicularly crossed electrically conductive wires mounted to a chassis plate which defines openings therein, the mounting means comprising:

a grid support formed of insulative material, said grid support comprising an elongated member having a first portion for connection to said grid and a second portion for connection to said chassis plate;

said first portion defining a pair of generally perpendicularly-oriented slots open to the outside of said first portion with the slots receiving therein adjacent, spaced, horizontal wires of said grid; and

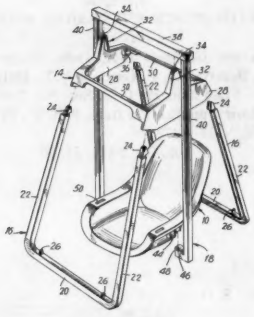
said second portion extending through a chassis plate opening and including spring means for forming a retaining member on the side of the chassis plate opposite the grid side.

4,271,627

DOLL HIGH CHAIR AND SWING

Eugene Echterling, Brentwood, Tenn., assignor to Louis Marx & Co., Inc., Stamford, Conn.

Filed Feb. 9, 1979, Ser. No. 10,861
Int. Cl.[3] A63H *3/52*
U.S. Cl. 46—15 **8 Claims**



1. A combined doll high chair and swing comprising means formed in an upper region thereof with a pair of spaced upwardly facing support locations; a seat member formed with a pair of spaced supportable regions, said seat member supportable regions and frame means support locations being adapted for cooperation to releasably support said seat member on said upper region of said frame means, and swing means having first and second portions joined with each other, said swing means first portion being formed with a pair of spaced supportable regions adapted for cooperation with said frame means support locations to provide releasable pivotable support for said swing means on said frame means with the second portion of said swing means positioned below said first portion thereof and below said frame means support locations, said swing means second portion being formed with a pair of spaced support locations adapted for cooperation with said seat member supportable regions to support said seat member for swinging displacement below said frame means support locations, each of said support locations comprising a projecting portion, said seat member supportable regions defining sockets for receipt of the corresponding projections.

4,271,628

GEOMETRIC CONSTRUCTION TOY APPARATUS

John V. Barlow, 2289 McBain Ave., Vancouver, British Columbia, Canada V6L 3B2

Filed Aug. 6, 1979, Ser. No. 64,025
Int. Cl.[3] A63H *33/10*
U.S. Cl. 46—29 **22 Claims**

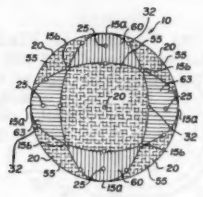
1. Toy apparatus for the formation of regular tetrahedron, octahedron and cube structures, comprising

a plurality of substantially spherical connector members each having an interior central point, each of said connector members having a plurality of radial first joint means arranged around the central point of the connector member, all of of said first joint means of each connector member being on opposite ends of axes of rotational symmetry through the central point, said first joint means being arranged symmetrically around the ends of said axes,

first locating means at each first joint means, all of the first locating means of each connector member being equidistant from the central point of said member and defining in co-axial pairs respective effective diameters thereof,

a plurality of elongate and slender connecting members each having second joint means at opposite ends thereof adapted to co-operate with the first joint means of connector members to interconnect the connector members and connecting members, and

second locating means adjacent each of the opposite ends of each connecting member, the distance between the second



locating means of each connecting member constituting the effective length of the latter connecting member, and when connector members and connecting members are being interconnected by the first and second joint means thereof, the first and second locating means thereof co-operate to position said connecting members angularly in lines forming vertices and central intersections of regular tetrahedron, octahedron and cube structures.

4,271,629

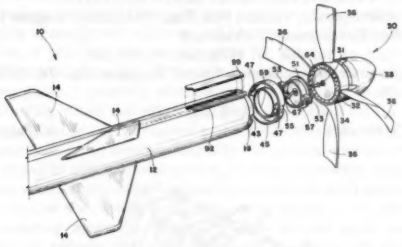
PROPELLER DRIVEN AERIAL TOY

Burnus R. Goodwin, 5326 S. Newport, Tulsa, Okla. 74105

Filed Jun. 9, 1980, Ser. No. 157,320

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—78 **4 Claims**



1. A propeller driven aerial toy comprising a hollow elongated cylindrical main body having a plurality of radially spaced fins mounted thereon, a front propeller assembly rotatably mounted on the forward end of said main body, said front propeller assembly having a circular propeller hub provided with a plurality of inwardly facing recessed notches along its periphery, a plurality of radially spaced propeller blades extending outwardly from the center of said propeller hub and a drive shaft mounted on said propeller hub extending inwardly through said center of said propeller hub and having a hook on its inner end which is internal of said main body; a rear propeller assembly substantially identical to said front propeller assembly rotatably mounted on the rear end of said main body in axial opposition to said front propeller assembly and counter rotating to the same; a rubber band motor disposed internally of said main body and having its ends received on the hooks of the drive shafts thus interconnecting said drive shafts and their respective propeller assemblies; a locking and firing mechanism housed internally of said main body and comprising a wheel rotatably mounted on a transverse wheel shaft, a lever employed to rotate said wheel having one end rotatably received on said wheel shaft so as to be interposed between the sides of said wheel and having its opposite end extending outwardly therefrom, a pair of elongated lock rods in longitudinal alignment with said main body having their inner ends affixed to one side of said wheel and having their outer ends adapted so as to be engageable with the recessed notches of said propeller assemblies, a spring slidably received on a portion of one of the lock rods, means for compressing said spring when said lock rods are in an extended position wherein their outer ends have engaged said recessed notches thus preventing the free rotation of said propeller assemblies, and means for retaining said lever in a perpendicular position to said main body wherein movement of said lever in a predetermined direction rotates said wheel and releases said spring thus retracting said lock rods out of said recessed notches and allowing said propeller assemblies to freely rotate.

4,271,630

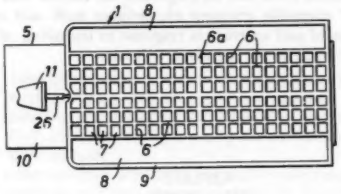
SOIL SUPPORTS FOR PLANT CONTAINERS

Bernard Zeltner, Aix en Provence, and Gaston Marmonnier, Marseilles, both of France, assignors to Manufacture Provencale de Matieres Plastiques SA, Marseille, France

Filed Jun. 25, 1979, Ser. No. 51,725

Int. Cl.³ A01G *27/00*

U.S. Cl. 47—81 **6 Claims**



1. A soil support for a plant container having a rigid fabric support structure comprising a plurality of fabric support members defining openings between them and a layer of substantially inextensible water-permeable fabric extending across the openings in planar manner, at least two spaced apart regions of the fabric being held in a condition deformed from the plane of the fabric by at least two of the spaced-apart support members, one region to each member, to hold the planar fabric in tension between the deformed regions, and said at least two support members extending outwardly beyond the plane of the fabric to provide rigidity against deflection from said plane to support the weight of soil within a container.

4,271,631

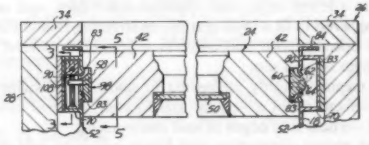
SELF-LOCKING AUTOMATICALLY-RELEASING SASH BALANCE FOR TILTABLY-REMOVABLE SLIDING SASH WINDOWS

Donald M. Trout, 15514 Forrer Rd., Detroit, Mich. 48227

Filed Mar. 28, 1979, Ser. No. 24,872

Int. Cl.³ E05D *15/22, 13/12*

U.S. Cl. 49—181 **9 Claims**



1. A self-locking automatically-releasing sash balance for a tiltably removable sliding sash window frame, in which an elongated channel sash guide is adapted to be mounted vertically in the window frame on opposite sides thereof,

said channel sash guide having spaced substantially parallel

front and rear walls and spaced opposite side walls interconnecting said front and rear walls,

said front wall having an elongated longitudinal aperture therein with spaced parallel opposite edge portions, and

a lock carrier is reciprocably mounted in said channel sash guide, and

a sash balancing spring is mounted in said channel sash guide and having an upper portion thereof anchored to an upper portion of said sash guide and having a lower portion connected to said lock carrier, and

a locking member is movably mounted on said lock carrier for motion into and out of locking engagement with one of said sash guide walls, that improvement which comprises

a lock operator adapted to be mounted on a lower portion of one side of the sash and having a projection extending through said aperture including a pivot portion pivotally engaging said sash guide edge portions and a straight eccentric portion operatively engaging said locking member,

said lock operator being responsive to the tilting of the sash out of and into the window frame for moving said locking member respectively into and out of locking engagement with said one sash guide wall, and a sash keeper immovably mounted on an upper portion of said one side of the sash remote from said lock operator for motion into and out of releasable gripping engagement with said edge portions of said aperture in response to the tilting of the sash into and out of the window frame.

4,271,632

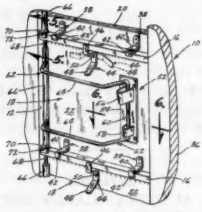
SILO DOOR

James P. Vanderloop, Rte. #4, Kaukauna, Wis. 54130

Filed Dec. 20, 1979, Ser. No. 105,941

Int. Cl.³ E05D *15/52*

U.S. Cl. 49—192 **11 Claims**



1. A silo door for a silo having cylindrical side walls, said silo walls having inner and outer cylindrical surfaces, said silo walls having at least one opening therein defined by upper and lower horizontal edges and spaced apart vertical side edges, said door comprising:

a door member having an inner face, an outer face, an upper edge, a lower edge, and opposite side edges, said door being sized to fit within said silo in covering relation over said opening with said outer face presented toward the exterior of said silo,

hinge means movably connected to said silo for swinging movement about a vertical axis located adjacent one of said vertical side edges of said one opening,

bracket means connecting said hinge means to said door member, said bracket means being adapted to permit limited inward tilting movement of said door with respect to said hinge means about a horizontal tilt axis;

latch means for selectively detachably securing said door member to said silo in covering relation over said opening.

4,271,633

MOLDING FOR VEHICLE DOOR EDGES

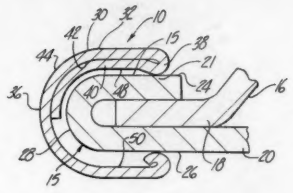
Robert Adell, Bloomfield Hills, Mich., assignor to U.S. Product Development Company, Novi, Mich.

Continuation of Ser. No. 863,997, Dec. 23, 1977, abandoned.

This application Mar. 16, 1979, Ser. No. 21,085

Int. Cl.³ E04F *19/02*

U.S. Cl. 49—462 **4 Claims**



1. For a vehicle body having a sheet metal closure, such as a door, on a marginal edge of which an ornamental and protective metallic edge molding is adapted to be disposed, said molding being formed from a strip of resilient metal to form a generally U-shaped cross section having two side legs and a bottom, the thickness of which correspond to the thickness of the strip material, the improvement in said molding characterized in that there is provided an excess of material along one edge of the strip which is folded back against and along the length of one of the two side legs of the U to thereby increase the stiffness of that side of the U relative to the other side of the U.

4,271,634

CHANNEL-SHAPED SEALING STRIPS

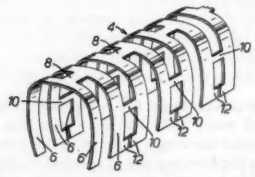
Heinz Andrzejewski, Viersen, Fed. Rep. of Germany, assignor to Draftex Development, Switzerland

Filed Jul. 27, 1979, Ser. No. 61,255

Claims priority, application United Kingdom, Jul. 29, 1978, 31642/78

Int. Cl.³ E06B *7/16*

U.S. Cl. 49—491 **4 Claims**



1. A channel-shaped sealing, trimming or finishing strip, or a channel-shaped window glass guide, comprising

a series of generally U-shaped metal elements arranged in side-by-side and spaced-apart relationship so as to define a channel,

each element being connected to the adjacent element on one side of it by a single first link, only, which extends from the base of that element to the base of the adjacent element and being connected to the adjacent element on its other side by two second links, only,

each second link extending from a point on a respective one of the legs of that element to a point on the corresponding leg of the adjacent element on the said other side,

each one of the pair of legs which are connected together by a said second link also carrying an extension piece which is adjacent to its distal end and which terminates in an abutment face adjacent the abutment face of the corre-

sponding extension on the other one of those legs whereby the abutment of the abutment faces when the strip or guide is stretched limits the extent to which the distal ends of those legs can move towards each other and thus limits the extent of stretching of the strip or guide,

and channel-shaped flexible covering material in which the elements, links and extension pieces are embedded.

4,271,635

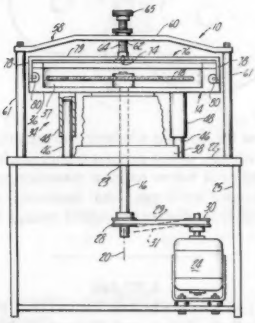
ICE SKATE-SHARPENING APPARATUS

John J. Szalay, 2203 Independence, Ann Arbor, Mich. 48104

Continuation of Ser. No. 964,743, Nov. 29, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,718

Int. Cl.³ B24B *9/04*

U.S. Cl. 51—5 D **7 Claims**



1. Ice skate-sharpening apparatus comprising means defining a horizontal work-supporting surface having an opening extending vertically therethrough, a drive shaft extending vertically through said opening and having a vertical axis of rotation, a grinding wheel positioned for rotation in a generally horizontal plane and mounted on said drive shaft for rotation therewith, a grinding wheel housing assembly supporting said grinding wheel and said drive shaft for rotation for the grinding wheel in said horizontal plane, adjustable mounting means supporting said housing assembly for vertical movement with respect to said work-supporting surface to position said grinding wheel at any one of a plurality of selected work-performing positions above said work-supporting surface, said adjustable mounting means including a hollow tubular guide member spaced radially outwardly from and enclosing said shaft and fixedly mounted on said work-supporting surface, a hollow tubular follower member telescoped with said hollow tubular member for guided vertical movement relative thereto and connected to said drive shaft for vertical movement therewith, and vertical positioning means mounted on said work-supporting surface and connected to said housing assembly for vertically positioning said housing assembly and thereby said grinding wheel relative to said work-supporting surface, a prime mover for rotating the grinding wheel, said prime mover being mounted beneath said work-supporting surface in a fixed position essentially vibrationally isolated from said grinding wheel and said adjustable mounting means, drive transmission means connecting said prime mover with said drive shaft for rotation of said drive shaft and thereby said grinding wheel in any of said plurality of selected work-performing positions, said drive transmission means being connected at one end to said drive shaft and at the other end to said prime mover, said one end being freely movable vertically together with said drive shaft, said adjustable mounting means being mounted on said work-supporting surface and on said housing assembly and being operable to adjust the vertical position of said housing assembly and thereby said grinding wheel relative to said work-supporting surface so that an ice skate blade can be supported at a fixed elevation on said work-supporting surface and the position of said grinding wheel can be adjusted relative to the blade to enable the blade to be sharpened in an optimum manner.

4,271,636

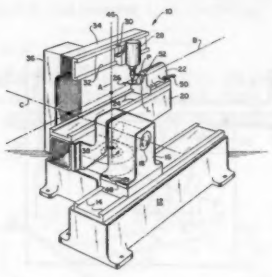
LENS GENERATING APPARATUS

W. Duane Hamilton, Middletown, R.I., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sep. 21, 1979, Ser. No. 77,681

Int. Cl.³ B24B *13/00*

U.S. Cl. 51—33 W **10 Claims**



1. Lens generating apparatus comprising a machine base;

a work carrying arm supported by said base, said work carrying arm being pivotal relative to said base about a first axis for swinging a workpiece carried thereby about said first axis;

a cutter carrying arm also supported by said base, said cutter carrying arm being pivotal relative to said base about a second axis directed orthogonally to the direction of said first axis for swinging a cutter carried thereby about said second axis;

means for supporting a workpiece on said work carrying arm and means for supporting a fixed radius axially rotatable cutter on said cutter carrying arm, said cutter having a thin edge disposed in a plane parallel to the direction of said first axis and being rotatable about an axis parallel to the direction of said second axis;

means for selectively bringing a supported workpiece and said thin edge of said cutter to a point of working contact with each other; and

means for adjusting distances from said point of working contact to respective first and second axes according to corresponding curvatures desired to be generated on said workpiece whereby swinging of said work carrying and cutter carrying arms about respective first and second axes with simultaneous rotation of said cutter about its axis will effect a bicurve surface generation of said workpiece; said generation being toric when said distance from said working contact to first and second axes differ and spherical when said distances are alike.

4,271,637

SURFACE GRINDING MACHINE

Horst Geibel, Homberg/Ohm, Fed. Rep. of Germany, assignor to Elb-Werkzeug-und Maschinenbau GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 890,133, Mar. 27, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,452

Int. Cl.³ B24B *7/02*

U.S. Cl. 51—92 R **5 Claims**

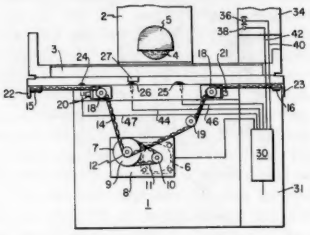
1. A surface grinding apparatus comprising

(a) a head,

(b) a grinding wheel mounted on said head,

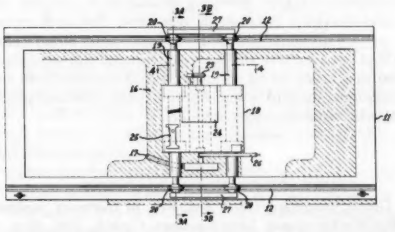
(c) a workpiece-supporting bench reciprocable along a predetermined, reciprocal path relative to said grinding wheel,

(d) a reversible drive means,
(e) said workpiece-supporting bench being mechanically coupled with said reversible drive means whereby the workpiece-supporting bench is reciprocated by said reversible drive means along side predetermined reciprocal path, the improvement characterized by
(f) a single control switch for reversing said reversible drive means to reciprocate said bench,
(g) said single control switch being centrally positioned relative to said reciprocal path of said bench,
(h) means providing communication between said control switch and said drive means,



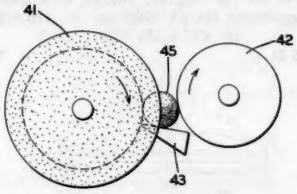
(i) a single switch actuating means associated with said control switch and mounted on said reciprocable bench,
(j) said control switch being operable upon activation by said single switch actuating means to emit a reversing signal through said communication means to said reversible drive means, and
(k) adjustable, electrical means in said communication means to delay the reversing signal from said control switch to said reversible drive means,
(l) whereby the distance traveled by said bench after actuation of said control switch and before reverse operation of said reversible drive means is varied according to the setting of said adjustable, electrical means.

4,271,638
PORTABLE SURFACE GRINDING MACHINE
William C. Creech, 1401 Kraft Rd., Jacksonville, Fla. 32218
Filed May 18, 1979, Ser. No. 40,599
Int. Cl.³ B24B *41/02*
U.S. Cl. 51—241 S **7 Claims**



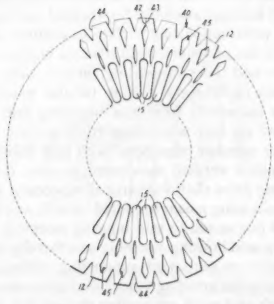
1. A portable surface grinder comprising a frame with a pair of spaced parallel tracks, a carriage movably mounted on a pair of spaced and elongated parallel shafts, each shaft terminating in a pair of spaced wheels which precisely roll in said tracks, a grinding wheel mounted on a third shaft is journalled eccentrically within a fourth shaft, all four shafts being parallel to each other, a power means mounted on said carriage for driving said third shaft, and an eccentric control for selectively rotating said fourth shaft to raise or lower the grinding surface of said grinding wheel, said eccentric control comprises a stud on said forth shaft and a length adjustable arm rotatably mounted on said carriage and rotatably connected to said stud.

4,271,639
MANUFACTURE OF SPONGE RUBBER SPHERES
Anselm Talalay, 2867 Ludlow Rd., Cleveland, Ohio 44120, and Leon Talalay, Chestnut La., Woodbridge, Conn. 06525
Filed Feb. 12, 1979, Ser. No. 11,288
Int. Cl.³ B24B *1/00, 11/08*
U.S. Cl. 51—322 **7 Claims**



1. A process for shaping a rubber sponge article having its pores filled with gas, which process comprises freezing rubber sponge by cooling it below its glass transition temperature by contact with very cold gas, and removing excess rubber sponge material from the frozen rubber sponge by high speed machining.

4,271,640
ROTATABLE FLOOR TREATING PAD
Richard T. Gadbois, Edina, and Richard A. Matthews, Lino Lakes Township, Anoka County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Division of Ser. No. 878,703, Feb. 17, 1978, Pat. No. 4,182,616.
This application Jun. 12, 1979, Ser. No. 47,886
Int. Cl.³ B24D *11/02, 3/32*
U.S. Cl. 51—400 **9 Claims**



1. An elongate strip of lofty nonwoven abrasive material suitable for being formed into a flat annular configuration to provide a rotatable floor treating pad comprising a conformable strip at least about 3 inches wide and being at least about ¼ inch thick of low-density lofty nonwoven abrasive material having throughout its length at least one of
(a) an expandable zone at least adjacent one side which will not permit buckling of said strip when it is formed into a flat annular shape with the expanded zone directed outward provided at least in part by a pattern of uniformly spaced slits which extend into said strip not more than about 35% of the width of said strip from said one side; and

(b) a contractable zone which will not permit buckling of said strip when it is formed into a flat annular shape with the contractable zone directed inward,

yet will provide an annular shape upon forming having at least one flat floor-contacting surface derived from one of the flat faces of said strip.

4,271,641

TENSION STRUCTURE

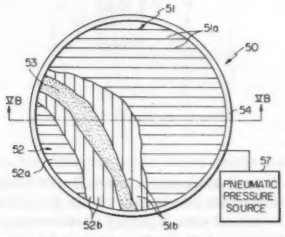
Mamoru Kawaguchi, Tokyo, Japan, assignor to Taiyo Kogyo Company Limited, Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,739

Claims priority, application Japan, Mar. 6, 1978, 53-244484; Mar. 15, 1978, 53-28595

Int. Cl.³ E04B *1/34*

U.S. Cl. 52—2 **12 Claims**



2. A tension structure comprising:

a boundary means;

a group of elongated metal strips arranged side by side substantially without means for transmitting force between the adjacent strips, each thereof being secured at opposite ends in a longitudinal direction thereof to said boundary means; and

means for applying tension of each of said metal strips substantially only in said longitudinal direction to form a stabilized continuous curved surface by said strips, said means including another group of metal strips opposing said first group to provide a space therebetween and pneumatic pressure applied to said space, said strips in both groups being partially overlying each other at their longitudinal edges.

4,271,642

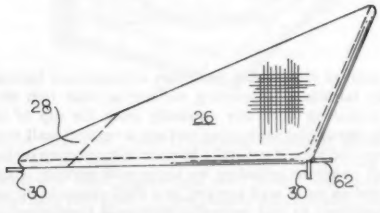
TENT WITH INFLATABLE TUBE ERECTOR

Dale A. Karr, 3131 Cauby St., #29, San Diego, Calif. 92110

Filed Sep. 17, 1979, Ser. No. 76,509

Int. Cl.³ E04B *1/345*

U.S. Cl. 52—2 **3 Claims**



1. A tent, particularly for use by backpackers, comprising:

(a) a canopy of flexible sheet material having a sloping roof panel, opposing generally obtuse angled triangular side wall panels and a generally rectangular floor panel, connected together and capable of defining an occupancy space having a closed apex at one end of said floor panel and an enlarged front opening at the other end of the floor panel, said roof panel extending well beyond said floor panel at said opening as an overhang;

(b) said canopy having a continuous tunnel on three edges only of said floor panel and having an arched segment arching over said front opening; and

(c) a flexible inflatable tube within said tunnel and of substantially the same length as said tunnel, said tube having a natural tendency to straighten when inflated within limits imposed by said tunnel, so that said tube when inflated erects said canopy with said roof panel and adjacent portions of said side wall panels extending well beyond said floor panel at said opening as an overhang.

4,271,643

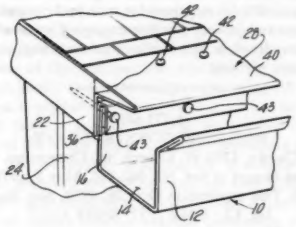
EAVES TROUGH MOUNTING ADAPTER

Ronald L. Sweers, 6165 E. Atherton, Flint, Mich. 48507

Filed Oct. 24, 1979, Ser. No. 88,051

Int. Cl.³ E04D *13/04*

U.S. Cl. 52—11 **5 Claims**



1. An adapter for securing an eaves trough to a roof of a building, said adapter comprising,

a roof flange which abuts against an upper surface of said roof,

a channel member having a channel of a predetermined width open at one end, and

means for attaching said roof flange to said channel member so that said open end of said channel member faces downwardly while said roof flange flatly abuts against said upper surface of the roof, and

wherein said means comprises means for adjusting the angle between the plane of said roof flange and the downwardly extending plane passing through the axis of the channel while maintaining the predetermined width of said channel.

4,271,644

HALL WITH MOBILE WALL AND ROOF ELEMENTS

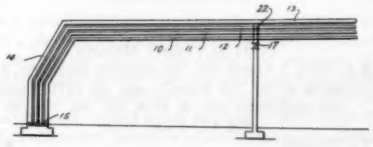
Philippe Rilliet, Chemin des Fleurettes 47, CH-1007 Lausanne, Switzerland

Continuation-in-part of Ser. No. 873,099, Jan. 30, 1978, abandoned. This application Oct. 26, 1978, Ser. No. 954,922

Claims priority, application Switzerland, Feb. 2, 1977, 1234/77

Int. Cl.³ E04B *1/346*

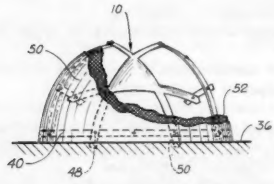
U.S. Cl. 52—67 **2 Claims**



1. A telescoping building, comprising

lateral and intermediate support means;
elongated ways on said lateral and intermediate support means and having longitudinally spaced end portions;
at least one stationary integral wall and roof element on said support means at each of said end portions and each having a predetermined height and width;
a set of movable integral wall and roof elements at each of said portions and having a progressively different height and width, all of said elements having respective base portions and each element at one end portion having an identically dimensioned counterpart element at the other end portion; and
roller means provided on each said base portion in rolling engagement with said ways of said lateral and intermediate support means for movement and guidance of said movable elements relative to the respective stationary element to and from a telescoped- apart position, all elements at each end portion being movable towards the elements of the respective other end portions so as to meet the same substantially midway between said end portions; and at least the intermediate common rail for said movable elements extending between said end portions, such movable elements of each set including a front frame having at least one roller in engagement with said common rail, said common rail having a roller-engaging surface located at the same level as the surfaces of roof supports on said stationary element.

4,271,645
BUILDING CONSTRUCTION
Melvin L. Crooks, 1201 W. Church St., Champaign, Ill. 61820
Continuation-in-part of Ser. No. 903,816, May 8, 1978, Pat. No. 4,182,086. This application Oct. 29, 1979, Ser. No. 89,256
Int. Cl.³ E04B *1/32;* A63H *33/12*
U.S. Cl. 52—81 **10 Claims**



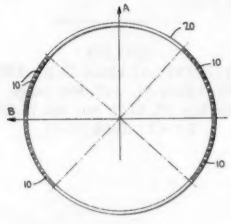
1. A framework for a hollow solid object comprising a plurality of basic building elements interconnected together, each of said elements being constructed of bendable resilient sheet material having a flat set and having three pairs of equally spaced connection points, each pair of connection points defining an axis extending therebetween, each of the axes of the pairs of connecting points intersecting the axes of both of the other pairs of connecting points at an angle of 60° and forming an equilateral triangle centrally of the element, the axis of each pair intersecting the axis of each of the other pairs at points spaced from the mid point between the connecting points of said axis by equal distances, a plurality of fastening means disposed at connecting points of the building elements, said fastening means securing each of said basic building elements on a plurality of other basic building elements.

4,271,646
POST SUPPORT MEANS
Derek J. Mills, 2 Avenue Rd., Maidenhead, Berkshire, England
Continuation of Ser. No. 566,825, Apr. 10, 1975, abandoned. This application Nov. 5, 1976, Ser. No. 739,296
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—165 **8 Claims**

1. Post support means comprising an elongate ground engaging portion of cruciform cross-section which is adapted to be driven vertically into the ground, the arms of the cruciform ground engaging portion being arranged diagonally of a rectangular plate portion attached transversely to the ground-engaging portion at one end thereof with no part of the cruciform section extending above the plate portion and no part of the cruciform section extending beyond the periphery of the plate portion, the plate portion being such that when the ground engaging portion is driven into the ground to its full length the plate portion on contacting the surface of the

ground will tend to compact the soil and provide increased resistance to further penetration of the ground engaging portion, and a vertical post-engaging portion comprising at least one flat plate member rigidly mounted on the plate portion with its plane parallel to one edge of the plate portion and extending in a direction away from the ground-engaging portion and so oriented that the axis of a post supported and engaged by the post-engaging portion is in substantial alignment with the axis of the ground engaging portion.

4,271,647
PRESTRESSED CONCRETE TANKS WITH SHEAR BLOCKS FOR RESISTING SHEARING FORCES
Lars Balck, Jr., Gainsville, Fla., assignor to The Crom Corporation, Gainesville, Fla.
Filed Sep. 13, 1979, Ser. No. 75,316
Int. Cl.³ E04H *7/20;* B65D *88/76*
U.S. Cl. 52—169.4 **43 Claims**



1. A storage tank which comprises a foundation having a generally horizontal supporting surface; at least two shear blocks projecting vertically upwardly from the top of said generally horizontal supporting surface; a vertical wall structure supported by said generally horizontal supporting surface, said wall structure including an inner wall portion, a shell means, and an outer wall portion, said shell means being sealingly connected to said generally horizontal supporting surface, said outer wall portion only partially enclosing each of the shear blocks; a first bond breaker means located between said inner wall portion and said generally horizontal supporting surface, and a second bond breaker means located between said outer wall portion and the top side of each of said shear blocks and the generally horizontal supporting surface; said

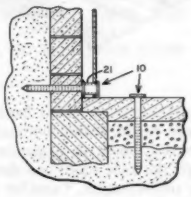
shear blocks, bond breaker means, and shell means allowing for said wall structure to be not only sealed to but radially movable on said generally horizontal supporting surface, yet providing for resistance to shearing forces caused by backfilling, earthquakes, and like occurrences.

4,271,648

SUBTERRANEAN DRAIN SYSTEM FOR BASEMENTS

David S. Johnson, 8660 Stone Bridge Trail North, Stillwater, Minn. 55082

Filed Sep. 4, 1979, Ser. No. 72,440
Int. Cl.³ E02D *19/00*
U.S. Cl. 52—169.5 **3 Claims**



1. Apparatus for relieving static subterranean water heads surrounding subterranean walls which comprises:

(a) perforated hollow sleeve means arranged to extend through a subterranean wall and into a surrounding water head at a level below the top of the subterranean water table, and having distal and proximal ends with said perforations being generally radially extending bores formed along the length of said sleeve and with each of said bores having a predetermined area;

(b) said distal end being tapered substantially to a pointed tip axially of said hollow sleeve, with said tip being of generally solid construction; and

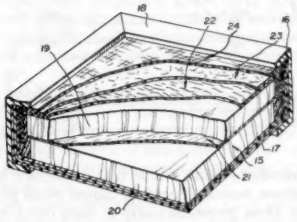
(c) flanged coupling means formed adjacent said proximal end for coupling water conduit internally thereof.

4,271,649

STRUCTURAL PANEL

Germain Belanger, St. Germain de Grantham, Canada, assignor to Bombardier Limited, Quebec, Canada

Filed Apr. 9, 1979, Ser. No. 28,596
Int. Cl.³ E06B *3/00*; E04C *2/34, 2/38*
U.S. Cl. 52—309.2 **8 Claims**



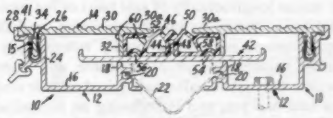
1. A structural panel comprising laminated planar outer layers of resin bonded glass fibre arranged on opposite faces of a relatively thick, lightweight core matrix, said core matrix comprising two sheets of low density material each bonded to the glass fibre outer layers on one side of the panel, and bonded together in confronting relationship in the neutral plane of the panel, and said outer layers of glass fibre on each face of the panel comprising successively from the outermost face (a) a layer of woven roving (b) a random fibre mat and (c) at least one layer of unidirectional fibres.

4,271,650

EXPANSION JOINT COVER

David M. Lynn-Jones, Muncy, Pa., assignor to Construction Specialties, Inc., Cranford, N.J.

Filed Nov. 22, 1978, Ser. No. 962,933
Int. Cl.³ E01C *11/02*; E04F *15/14*
U.S. Cl. 52—395 **9 Claims**



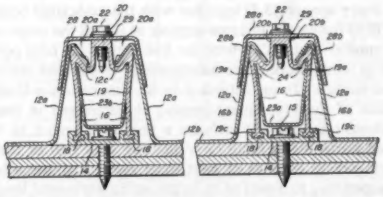
1. An expansion joint cover for closing an expansion gap between sections of a structure comprising at least one elongated frame assembly including (1) a base member having in cross section a bridge-supporting rib adjacent the gap and a cover-supporting flange spaced laterally outwardly from the rib, the cover-supporting flange having an upwardly open groove and an abutment located laterally outwardly from the groove, relative to the expansion gap, the frame assembly further including (2) a cover member having in cross-section a web portion, a bridge-supported flange extending down from the underside of the web portion adjacent the expansion gap generally vertically above the bridge-supporting rib of the base member and a retainer rib extending down from the underside of the web portion and received in the groove of the base member, and the frame assembly further including (3) a multiplicity of longitudinally spaced-apart generally U-shaped spring clips received on the retainer rib and received in the groove of the base member and securing the cover plate to the base member against relative vertical movement with part of the web portion of the cover engaging the abutment of the base member and preventing tipping of the cover plate about the retainer rib in a direction tending to unseat the bridge-supported flange from supported position on the bridge; a bridge plate spanning the gap, supported on the bridge-supporting rib of the base member and supporting the bridge-supported flange of the cover member, and an elongated resilient filler strip supported by the bridge and spanning the expansion gap transversely.

4,271,651

BATTEN AND PANELING SYSTEM

Paul J. Sorrells, Jr., Tucker, Ga., assignor to MM Systems Corporation, Tucker, Ga.

Filed Jun. 1, 1979, Ser. No. 44,773
Int. Cl.³ E04D *1/36*
U.S. Cl. 52—460 **13 Claims**



1. In a panel and batten system, the combination which includes a plurality of brackets each comprising a pair of leg means, and bridger means interconnecting said pair of leg means; bodily substantially freely longitudinally expansible and contractable gutter means carried by said pairs of leg means of said brackets over a substructure and under said bridger means of said brackets and having a laterally open side, with said brackets being aligned spaced apart from one another on an axis; guide means connected with said substructure, said guide

means and outer ends of said pairs of leg means of said brackets including interlocked, longitudinally relatively movable tongue and grooved portions underlying said gutter means, for said brackets movably to follow said guide means longitudinally of said guide means in interlock with said guide means laterally of said guide means and for said pairs of leg means of said brackets to transmit thrust from said bridger means of said brackets to said guide means and be retained assembled with said guide means longitudinally of said pairs of leg means; first and second panel means on said substructure, said first and second panel means each being bodily substantially freely longitudinally expansible and contractable and comprising panel structure and batten wall means raised outside said gutter means and said brackets and introducing an end adjacent to said laterally open side of said gutter means, having said gutter means and said brackets in positions intermediate said batten wall means of said first and second panel means; and bodily substantially freely longitudinally expansible and contractable batten cover means covering said laterally open side of said gutter means, said brackets and relatively movably said ends of said batten wall means of said first and second panel means and connected with said bridger means of said movably guided brackets to move with said brackets during longitudinal expansion and contraction of said batten cover means.

4,271,652

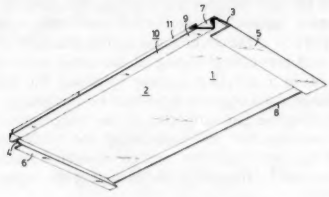
FACING

Ake Svensson, Kryddgardsvägen 83, 145 73 Norsborg, Sweden

Filed Jul. 23, 1979, Ser. No. 59,597

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—478 **4 Claims**



1. A facing of sheet metal for residential, factory buildings and other units, comprising facing elements (1) and attachment means (12,23) for the same, where every facing element (1) has a substantially plane upper surface (2) intended to constitute the outer surface and where a tongue (3,4) is formed from the lower and, respectively, upper short side of the facing element, which tongues (3,4) extend upward and from the upper surface (2) to form an angle with the upper surface, and where the upper and the lower tongue (3,4) are bent at their free ends, so that every tongue (3,4) together with the associated bent portion (5,6) forms a V in cross-section, at which the angle of the V is smaller than 90°, where the free legs of the bent portions (5,6) in cross-section are substantially in parallel with said upper surface (2) and intended to be attached in a U-shaped portion of the attachment means, characterized in that the attachment means (12) includes a section intended to be attached horizontally lying on a building wall (13) or the like, which section consists of bent sheet metal and has a length corresponding to a part of or to the entire horizontal length of a wall (13) or the like to be faced, and which at its (12) outer end has said portion (14) of U-shaped cross-section into which the bent portion (5) of the upper tongue (3) of a facing element (1) and the bent portion (6) of the lower tongue (4) of a facing element (1) located next above said lastmentioned facing element (1) are intended to be inserted, and that the U-shaped portion (14) of the section retains both facing elements (1) in vertical and horizontal direction when the upper surfaces (2) of the facing elements (1) are in a vertical plane.

4,271,653

CLADDING SHEETS

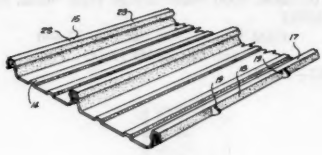
Peter Buchhorn, Cardiff, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Aug. 27, 1979, Ser. No. 70,016

Claims priority, application Australia, Oct. 26, 1978, PD6537

Int. Cl.³ E04D *3/362, 3/363*

U.S. Cl. 52—522 **1 Claim**



1. A cladding sheet of the kind having a longitudinally-shouldered female rib formation bordering one longitudinal edge of the sheet and a male rib formation bordering the other longitudinal edge, the male rib of one sheet being designed to enter the female rib formation of another similar sheet with at least a part of the free edge of a flange forming part of said male rib lockingly engaging over the shoulder of the female rib; characterised in that said free edge has a series of spaced-apart outwardly displaced abutments formed on it to such effect that when a male rib is homed in a female rib the distal edges of the abutments engage said shoulder to the exclusion of the remainder of the flange from which the abutments are displaced.

4,271,654

THREE-DIMENSIONAL STRUCTURES OF FRAME BEAMS AND MULTIPLE JOINTS

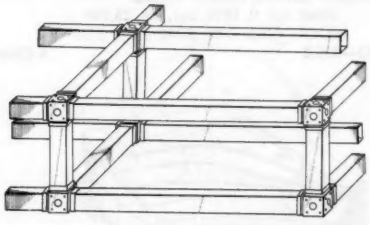
Otto Jungbluth, Frankensteiner Strasse 99, 6100 Darmstadt-Eberstadt, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,871

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1977, 2704954

Int. Cl.³ F16B *7/18*

U.S. Cl. 52—637 **4 Claims**



1. In a three-dimentional frame beam structure made of a plurality of frame beams of open or closed metal profile steel shapes which cross perpendicularly to each other and which are interconnected at all multiple joints by means of cubic multiple joint connectors, the improvement wherein:

said frame beams each have a substantially flat face plate for connection with said cubic multiple joint connectors;

said cubic multiple joint connectors each have at least five substantially flat joining surfaces perpendicular to each other adapted to be joined with a face plate of a frame beam, said joining surfaces which are connected to a respective face plate of a beam being connected by at least two high strength bolts to its respective face plate, said at least two bolts being located within the outline of the cross-section of said frame beams; and

said frame beam structure including frame beams of hollow profile shapes, and said bolts connected to said hollow profile frame beams each having two longitudinal grooves therein, and further comprising holed tightening discs having cam means engaging with said grooves for turning said grooved bolts relative to said frame beam to which said grooved bolts are connected.

4,271,655
SEMIAUTOMATIC-AUTOMATIC STRAPPING MACHINE

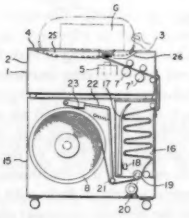
Katsuhiro Nagayoshi, Yokohama, Japan, assignor to Nichiro Kogyo Co, Ltd., Yokahama, Japan

Filed Aug. 21, 1979, Ser. No. 68,335

Claims priority, application Japan, May 14, 1979, 54-63980[U]

Int. Cl.³ B65B *13/06, 67/08*

U.S. Cl. 53—201 **1 Claim**



1. A convertible automatic-semiautomatic strapping machine comprising:

a casing;

a table in said casing, said table having a receiving part and a longitudinal gap thereon for the passage of a plastic band;

a band feed roller in said casing;

a band return roller in said casing;

a band gripper in said casing;

a heat-pressing means positioned below said receiving part;

a removable arch positionable on said table, said arch including an arch guide having one portion fittable in said longitudinal gap adjacent said receiving part for taking up said band during automatic operation;

means for detachably retaining said arch on said table;

a band projection guide positionable in said longitudinal gap when said arch has been removed for semiautomatic operation, said band projection guide being positioned adjacent said receiving part in the place of said one portion of said arch guide, said band projection guide including a tapered part for projecting the end of said band above said table;

a band inserting guide positionable in said longitudinal gap adjacent said receiving part and opposite said band projection guide, said band receiving guide having a tapered part for inserting the end of said band between said receiving part and said heat pressing means during semiautomatic operation; and

means for removably retaining said band projection guide and said band inserting guide in said longitudinal gap.

4,271,656
ENVELOPE PROCESSING MACHINE

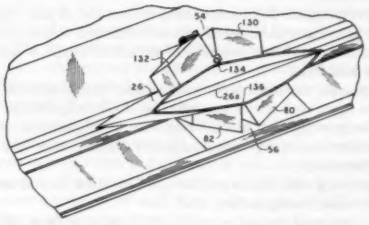
Robert J. Russell, Medford, N.J., assignor to Mail-Ex Corporation, Skokie, Ill.

Filed Sep. 26, 1979, Ser. No. 78,920

Int. Cl.³ B65B *43/30*

U.S. Cl. 53—381 R **8 Claims**

1. An envelope processing machine comprising: a supply hopper for envelopes; an envelope processing station; means for removing envelopes from the supply hopper and for transmitting the removed envelopes to the envelope processing station; and envelope opening means at said processing station including a pair of envelope gripping means arranged for reciprocal movement to grip and separate opposite panels of an envelope to facilitate the removal of contents therefrom and each including envelope panel bending means with pivotally connected panel seizing means arranged to pivot toward each



other as the envelope panels are separated for bending their respective envelope panel proximate to the pivotal connection of said seizing means; and said seizing means including air suction means for seizing the envelope side panels and blower means for blowing air through the envelope side panels to further promote displacement of the envelope contents from the envelope panels.

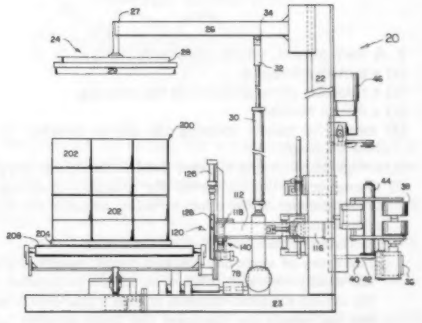
4,271,657
AUTOMATIC WEB TYING APPARATUS

Patrick R. Lancaster, III, Anchorage, and William G. Lancaster, Louisville, both of Ky., assignors to Lantech Inc., Louisville, Ky.

Continuation of Ser. No. 928,236, Jul. 26, 1978, Pat. No. 4,235,062, which is a continuation of Ser. No. 911,652, Jun. 1, 1978, Pat. No. 4,204,377, which is a continuation-in-part of Ser. No. 709,957, Jul. 30, 1976, Continuation of Ser. No. 478,523, Jun. 12, 1974, abandoned. This application Mar. 16, 1979, Ser. No. 21,198

Int. Cl.³ B65B *11/04*

U.S. Cl. 53—399 **26 Claims**



1. A process for spirally wrapping a web of stretchable material around a load comprising a plurality of units to form a unitary packaged load comprising:

a. placing a roll of stretchable material on a dispenser;

b. withdrawing a leading end of said web of material from said roll and forming said leading end into a rope-like configuration having a width less than the width of the original web;

c. holding the leading rope-like end of said stretchable material adjacent a load comprising a plurality of units;

d. withdrawing said stretchable material from said roll;

opening the web of material from its rope-like configuration as it is drawn from said roll to assume an open web configuration while causing relative movement between said roll and said load;

f. stretching said material as it is dispensed from said roll to said load;

g. moving said material in a direction along the axis of the load to form a plurality of stretched wraps of material on said load;

h. reversing the direction of said movement of said material to provide a plurality of second stretched wraps of material over said first plurality of stretched wraps of material on said load;

i. engaging the open web with a roper mechanism to form the open web into a second rope-like configuration;

j. transporting the second rope-like configuration with a mechanism to a position adjacent the first rope-like configuration;

k. fastening said first rope-like configuration to said second rope-like configuration; and

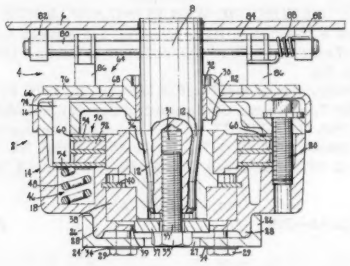
l. severing said second rope-like configuration from said roll of stretchable material.

4,271,658

CLUTCH AND BLADE BRAKE FOR LAWN MOWER

Leslie W. Foster, Wayzata, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Mar. 10, 1980, Ser. No. 128,939
Int. Cl.[3] A01D *69/08, 69/10*
U.S. Cl. 56—11.3 **18 Claims**



1. A lawn mower, which comprises:

(a) a movable housing;

(b) a rotatable drive member on the housing;

(c) a driven member;

(d) means for axially securing the driven member to the drive member;

(e) a vegetation cutting element fixed to the driven member;

(f) disengageable clutch means for rotatably coupling the driven member to the drive member, wherein the clutch means comprises:

(i) a thrust surface on the driven member;

(ii) an array of vertically stacked clutch members which are axially movable relative to the drive member and the driven member, wherein at least a first clutch member has means for engaging the drive member to be rotated thereby, and wherein the clutch members are stacked in an abutting face-to-face relationship in which the clutch members are driven by friction from the first clutch member;

(iii) biasing means for axially forcing the array of clutch members against the thrust surface of the driven member to couple the driven member to the drive member; and

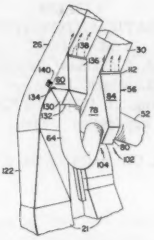
(iv) means for overcoming the force of the biasing means to remove the array of clutch members from engagement with the thrust surface and uncouple the driven member from the drive member.

4,271,659

AIR DUCT SYSTEM FOR A COTTON HARVESTER

Kenneth C. McConnell, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 5, 1979, Ser. No. 100,318
Int. Cl.[3] A01D *45/18*
U.S. Cl. 56—13.3 **16 Claims**



1. In a cotton harvester having at least first and second ducts with an input end for receiving harvested cotton to be conveyed and a discharge end for discharging the harvested cotton from the duct, an air blower, and air distributing means for directing the air from the blower into the ducts toward the discharge ends and causing flow of the cotton through the ducts, the improvement in the distributing means comprising:

an air distribution nozzle including an inlet port for receiving air from the blower, an outlet port, and a vent;

means for connecting the air distribution nozzle to the first duct with the vent opening into the first duct;

first conduit means connected between the inlet port and the blower for supplying air to said port, and causing air flow through the outlet port and the vent;

a nozzle member including an inlet port and a discharge port in communication with the second duct; and

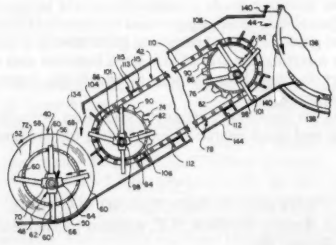
second conduit means connected between the outlet port of the air distribution nozzle and the inlet port of the nozzle member for supplying air from the outlet port of the distribution nozzle to the second duct.

4,271,660

COMBINE CONVEYOR APPARATUS

Melvin L. Kloefkorn, Manchester, Okla. 73758; Earl W. Kloefkorn, deceased, late of Manchester, Okla., and by Marvin V. Green, administrator, 3211 Uvalda St., Aurora, Colo. 80011

Filed Sep. 28, 1979, Ser. No. 79,792
Int. Cl.[3] A01D *57/00, 89/00*
U.S. Cl. 56—14.6 **9 Claims**



1. A combine conveyor apparatus having a new and novel combine auger conveyor apparatus contained therein, comprising:

(a) said combine conveyor apparatus includes a combine material directing and cutting apparatus to cut material

and move same into said combine auger coveyor apparatus;

(b) said combine auger conveyor apparatus includes (1) a feeder auger conveyor assembly to receive the material from the combine material directing and cutting apparatus; (2) a feeder slat conveyor assembly to receive the material from the feeder auger conveyor assembly; and (3) a threshing cylinder assembly to receive the material from the feeder slat conveyor assembly;

(c) said feeder slat conveyor assembly includes a first sprocket assembly with a retractable finger assembly adjacent said threshing cylinder assembly to thrust material thereto;

(d) said feeder slat conveyor includes a second sprocket assembly connected to said first sprocket assembly by a feeder chain and slat assembly; (e) said feeder chain and slat assembly includes a spaced chain assembly to interconnect said first sprocket assembly and said second sprocket assembly and a plurality of parallel, feeder conveyor slat members interconnecting said chain assembly; and

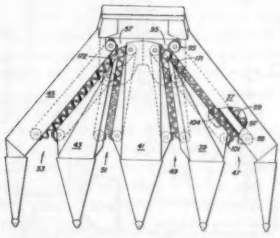
(f) said feeder conveyor slat members act against the material to move same upwardly to said second sprocket assembly.

4,271,661

HARVESTER HEADER WITH REARWARDLY EXTENDED CROP DIVIDER

Harold E. deBuhr, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 11, 1979, Ser. No. 74,567
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—98 **14 Claims**



1. In a header for a row crop harvester with a crop receiving throat, said header comprising:

a plurality of generally fore-and-aft, downwardly and forwardly inclined dividers, said dividers converging at the rear ends thereof;

a plurality of crop receiving, converging passageways defined between adjacent ones of said dividers, each passageway having a crop entry and crop exit at the forward and rearward ends thereof, respectively, said exits disposed adjacent said throat;

cutter means disposed adjacent the crop entry of each passageway for severing crop;

a frame comprised of two sections;

a substantially coplanar pair of planar conveyors respectively disposed on opposite sides of each passageway for conveying severed crop along said passageway and into said throat, a first and second pair of conveyors mounted on one of said frame sections, and a third and fourth pair of conveyors mounted on the other of said frame sections, said first, second, third and fourth pairs of conveyors corresponding to, respectively, first, second, third and fourth passageways of said plurality of passageways, said first and second pairs of conveyors inclined transversely and downwardly in a direction toward the third and fourth pair of conveyors, said third and fourth pair of conveyors inclined transversely and downwardly in a direction toward said first and second pair of conveyors;

each said conveyor comprises an endless loop means extending along one side of the passageway defined in part thereby for engaging and conveying crop from the crop entry to the crop exit of said passageway in conjunction with the endless loop means extending along the other side of the passageway defined therebetween;

the endless loop means of the outer conveyors of said second and third pairs of conveyors terminating substantially forward of the endless loop means of the inner conveyors of the second and third pairs of conveyors;

the first and second passageways intersect forward of said throat and said third and fourth passageways intersect forward of said throat; and

one of said dividers housing the inner conveyor of said first pair of conveyors and the outer conveyor of said second pair of conveyors and another of said dividers housing the inner conveyor of said fourth pair of conveyors and the outer conveyor of said third pair of conveyors, wherein the improvement comprises:

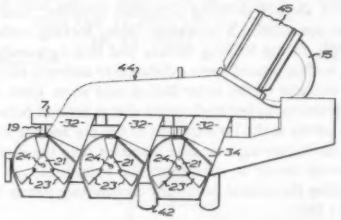
each of said one and said another dividers having a rear tip extending substantially beyond the rear end of said endless loop means of said outer conveyors of said second and third pair of conveyors and terminating near the intersection of said passageways, respectively.

4,271,662

MACHINE FOR HARVESTING THE FOLIAGE OF ROW CROPS

Alf H. Andersson, Ödakra, and Nils B. Glifberg, Staffanstorp, both of Sweden, assignors to Svenska Sockerfabriks AB, Malmo, Sweden

Filed Sep. 14, 1979, Ser. No. 75,464
Claims priority, application Sweden, Sep. 21, 1978, 7809924
Int. Cl.³ A01D *23/00*
U.S. Cl. 56—121.44 **5 Claims**



1. Machine for harvesting the overground foliage of row crops growing in a field while advanced in the field along the row of the crop by drive means, comprising

(1) a plurality of juxtaposed stripping wheels each for a respective row of the crop,

(2) a plurality of casings each enclosing one of said stripping wheels,

(3) a plurality of obliquely upwardly directed outlets each extending from one of said casings,

(4) wings on said stripping wheels adapted to disintegrate the foliage of the row crop and to produce an air stream for discharging the disintegrated foliage through said outlet of said casing of the respective stripping wheel,

(5) an ejector pipe for collective ejection of the disintegrated foliage emanating from said stripping wheels,

(6) a collecting channel connected at one end to said ejector pipe and extending above said stripping wheel casings.

(7) said outlets of said casings extending obliquely upwards in the same direction towards said ejector pipe and opening at intervals in a succession into a lower portion of said collecting channel, and

(8) a plurality of air supply means each discharging into the

lower portion of said collecting channel at that side of said outlet of each stripping wheel casing which faces said ejector pipe for injecting additional air into said collecting channel substantially in the direction of the ejector pipe end of said collecting channel.

4,271,663

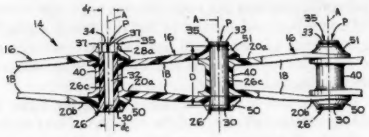
RELEASABLE LOCKING COUPLING PIN FOR CHAIN LINKS

Harry W. Templin, and Edward O. Enders, both of Indianapolis, Ind., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 22, 1979, Ser. No. 51,262

Int. Cl.³ F16G *15/00*

U.S. Cl. 59—84 **2 Claims**



1. A pin for insertion through portions of adjacent chain links to couple said chain links together at a pivot joint, said pin having a longitudinal axis, said pin also having a leading or forward end and a trailing or rearward end with respect to the directional sense of axial insertion into said links, said pin having a rib defining a first shoulder adjacent the forward end of the pin, said first shoulder constituting a rearwardly facing locking surface, said pin having a tapered nose forward of said rib, said pin having an internal cavity opening on the forward end of the pin and slots extending rearwardly from the extreme forward end of said pin through said nose and beyond said rib to permit radial contraction of the forward end of the pin on insertion through said links, said pin having a base at the rearward end thereof defining a second shoulder, said second shoulder constituting a forwardly facing locking surface, said rearwardly facing locking surface and said forwardly facing locking surface spaced apart a distance to embrace the extreme outside surfaces of the outer link at said pivot joint, said pin having a central cylindrical cavity that is located between the internal cavity at the forward end of the pin and the base, said central cavity having a smaller diameter than the diameter of the forward cavity to strengthen the cylindrical pin portion surrounding the central cavity for transmitting forces between the chain links.

4,271,664

TURBINE ENGINE WITH EXHAUST GAS RECIRCULATION

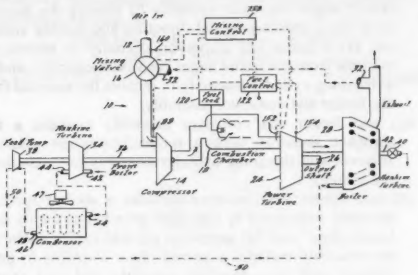
Ernest R. Earnest, Hobe Sound, Fla., assignor to Hydragon Corporation, Lake Park, Fla.

Division of Ser. No. 817,848, Jul. 21, 1977, Pat. No. 4,204,401, which is a continuation-in-part of Ser. No. 706,811, Jul. 19, 1976. This application Apr. 5, 1979, Ser. No. 27,287

Int. Cl.³ F02C *7/08*

U.S. Cl. 60—39.18 R **11 Claims**

1. An integrated Brayton cycle-Rankine cycle engine comprising a Rankine turbine and a rotary compressor driven thereby, a Brayton turbine and an intercycle heat exchanger heated by the exhaust of the Brayton turbine and delivering heat to the Rankine fluid for powering the Rankine turbine, a burner and air supply assembly for delivering air from the compressor and products of combustion from the burner to the Brayton turbine, recirculation means for recirculating a portion of the exhaust gases from the Brayton turbine into a compressor in order to increase the thermal efficiency of the engine, and control means for measuring the Brayton turbine inlet temperature, the ambient air temperature, and the compressor inlet temperature, and for adjusting the recirculating



means in accordance therewith during part load operation of the engine.

4,271,665

INSTALLATION FOR GENERATING PRESSURE GAS OR MECHANICAL ENERGY

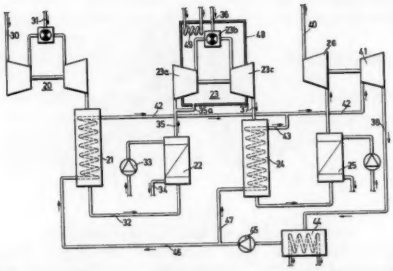
Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 24, 1979, Ser. No. 32,750

Claims priority, application Switzerland, Apr. 26, 1978, 4491/78

Int. Cl.³ F02C *6/06*

U.S. Cl. 60—39.18 B **13 Claims**



1. An installation comprising

a first gas generator having a compression stage for intaking fresh air, at least one combustion chamber and an expansion stage for driving said compression stage and exhausting a flow of hot combustion gases;

a steam generator for receiving the flow of hot exhaust gas from said expansion stage and a flow of water in heat exchange relation therewith to generate a flow of steam from the flow of water;

a heat exchanger downstream of said steam generator relative to the flow of exhaust gas to cool the exhaust gas to near-environmental temperature;

a second gas generator having a second compression stage for receiving and compressing a flow of cooled exhaust gas from said heat exchanger, at least one combustion stage and an expansion stage for driving said second combustion stage and exhausting a second flow of hot exhaust gas;

a second steam generator for receiving the second flow of hot exhaust gas from said second gas generator and a second flow of water in heat exchange relation therewith to generate a second flow of steam from the second flow of water;

a second heat exchanger downstream of said second steam

generator relative to the second flow of exhaust gas to cool the exhaust gas to near-environmental temperature;

a compressor downstream of said second heat exchanger relative to the second flow of exhaust gas to compress the second cooled exhaust gas to a final pressure; and

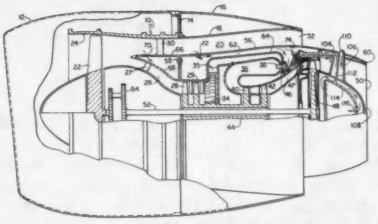
a steam turbine connected to at least one of said steam generators to receive a flow of steam therefrom and drivingly connected to said compressor.

4,271,666

INTEGRAL INFRARED RADIATION SUPPRESSOR FOR A TURBOFAN ENGINE

John F. Hurley, Easton, and Paul L. Hoffman, Stratford, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Aug. 20, 1979, Ser. No. 68,304
Int. Cl.³ F02K *3/04*
U.S. Cl. 60—226 R **4 Claims**



1. In a gas turbine engine having compressor, combustor, turbine and tailpipe stages arranged to sequentially receive the primary airflow of the engine, means to reduce the infrared radiation of the tailpipe and exhaust of said engine comprising:

a generally cylindrical housing constructed to support and enclose the gas tubine engine, said housing having a closed inner cavity surrounding at least the turbine components of the engine but isolated from the primary airflow:

means communicating with the closed cavity of the housing to allow air to enter said cavity;

a fire shield mounted in the inner cavity of the housing to divide the airflow therein and direct a portion of said airflow toward the hotter portions of said housing to increase the cooling provided thereby; and

a containment shroud mounted in the housing to enclose the power turbine rotor of the engine and isolate the main fluid flow from the cavity, said shroud being constructed with a passage extending between the housing cavity and the exhaust tailpipe section of the housing immediate downstream of said turbine to form an eductor to draw cooling air into the exhaust from the housing cavity.

4,271,667

APPARATUS FOR CONTROLLING THE AMOUNT OF SECONDARY AIR FED INTO AN INTERNAL COMBUSTION ENGINE

Tadao Mitsuda; Minoru Iwata, both of Susono; Masatoshi Sugiura; Shigetaka Takada, both of Obu, and Yukihiro Watanabe, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Industry Co., Ltd., both of Aichi, Japan

Filed Nov. 14, 1978, Ser. No. 960,654
Claims priority, application Japan, Nov. 29, 1977, 52/142162
Int. Cl.³ F01N *3/10*
U.S. Cl. 60—276 **9 Claims**

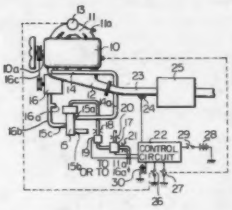
1. An apparatus for controlling the amount of secondary air fed into an internal combustion engine, said apparatus comprising:

means for generating a first electrical signal having two voltage levels which are selected in accordance with an air-fuel ratio condition of said engine;

means for generating second electrical signals having a predetermined pulse duration and having a frequency which is proportional to the rotational speed of said engine;

an air control valve having a control chamber to which a pneumatic pressure signal is applied, said valve, responding to the pressure level in said control chamber, controlling the amount of secondary air to be fed into said engine;

a single first switching valve responding to the voltage level of said first electrical signal, for generating a pneumatic



pressure signal by selectively communicating said control chamber of said air control valve with a pneumatic pressure source and with the atmosphere; and

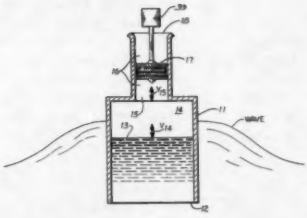
a single second switching valve connected between said control chamber of said air control valve and said first switching valve, said second switching valve intermittently transmitting said pneumatic pressure signal from said first switching valve to said control chamber in response to said second electrical signals.

4,271,668

COUNTER-ROTATING WAVE ENERGY CONVERSION TURBINE

Michael E. McCormick, 1906 Sands Dr., Annapolis, Md. 21401

Filed Oct. 17, 1979, Ser. No. 86,010
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—398 **7 Claims**



1. An apparatus for converting ocean wave motion into useful energy comprising,

a pressure chamber forming a pneumatic chamber above the ocean water whereby a standing wave is maintained within the pressure chamber and transformed to a surging wave by normal wave motion thereby causing cyclic compression and suction of the air within the pressure chamber above the standing wave,

a counter-rotating turbine transforming pneumatic suction and compression pressure of the air resulting from the wave surge into mechanical energy, said turbine comprising an output shaft mounted for rotation about a vertical axis within said pressure chamber, first and second rows of stationarily mounted guide vanes, a pair of counter-rotating runners connected with said output shaft and positioned between said first and second rows of stationarily mounted guide vanes, each runner having a plurality of

arcuate turbine blades arranged so as to be rotated by moving air within said pressure chamber, and

an aperture in said pressure chamber above said counter-rotating turbine for permitting air flow to and from said counter-rotating turbine.

4,271,669

RECIPROCATING-PISTON ENGINE, ESPECIALLY HOT-GAS ENGINE OR COMPRESSOR

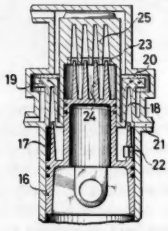
Arnulf A. Keller, and Norbert A. Keller, both of Bahnhofstrasse 20, Seefeld(Oberbayern), Fed. Rep. of Germany 8031

Filed Aug. 2, 1978, Ser. No. 930,341

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736472

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—517 **7 Claims**



1. A reciprocating-piston engine comprising, a piston cylinder having a cylinder head (3), a piston (1) connected to reciprocate in said cylinder and having a piston head, said cylinder head and piston head defining a working chamber therebetween in said cylinder adapted to contain an operating medium, housing rib means (4) connected to said cylinder head and extending into the working chamber, cooperating piston rib means (2) connected to said piston head and extending into the working chamber, said housing rib means and said piston rib means comprising thin plates which extend between one another during the entire reciprocating stroke of said piston and without mutual contact during the entire reciprocating stroke of said piston, and said cylinder head having a chamber (6) for heating or cooling medium positioned outside of the housing rib means and outside of the engagement zone of the housing rib means and piston rib means, whereby said housing rib means and piston rib means effect heat transfer between the operating medium in said working chamber and the heating or cooling medium adapted to be present in said chamber (6) in the cylinder head.

4,271,670

POWER ASSIST MECHANISM

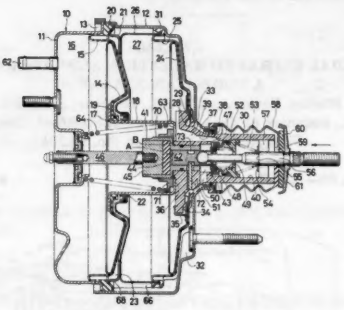
Atsushi Ohmi, Anjoshi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 2, 1979, Ser. No. 63,263

Int. Cl.³ B60T *13/20*

U.S. Cl. 60—554 **4 Claims**

1. A brake booster mechanism comprising a casing, at least one pressure reponsive power wall in said casing, valve mechanism means associated with said power wall and being movable relative thereto to control the differential pressure across the said power wall, actuating means connecting to a pedal for manually moving said valve mechanism means, output means for connecting the said power wall to a brake master piston, brake feel reaction means having a compressive member interposed between the said actuating means and the output means with a play clearance with respect to the actuating means in the retracted position thereof, and adjusting thread means for regulating said play clearance whereby during initial stage movement said actuating means is opposed by no brake reaction force through said compressive member until the actuating means becomes in abutment against the compressive member past the play clearance, and wherein said brake feel reaction means comprises a cage member, a head member connecting to said output means and slidably received in the cage member to define a chamber therein, said compressive member being held captive in the chamber, said actuating means being



movable relative to and having an acting face exposed against a portion of the compressive member with said clearance maintained therebetween, said cage member being axially threaded on the external face thereof, said adjusting thread means being an internally threaded ring in engagement with the threaded cage while being normally spring-biased toward abutment engagement with said power wall.

4,271,671

TWO STEP PRESSURE INTENSIFIER SYSTEM

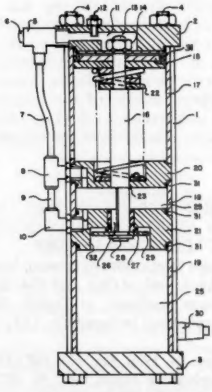
Gerard G. F. Smeets, 50 Inverlochy Blvd., Apt. 102, Thornhill, Ontario, Canada

Continuation of Ser. No. 777,965, Mar. 16, 1977, abandoned. This application Sep. 5, 1979, Ser. No. 84,184

Claims priority, application Canada, May 17, 1976, 252689

Int. Cl.³ B60T *11/08*

U.S. Cl. 60—578 **4 Claims**



1. A two-step fluid pressure intensifier system comprising first, second and third operative piston and cylinder units arranged in coaxial alignment, the pistons of the first and second units being rigidly fixed to a common piston rod, the first piston having a greater effective working area than the second and the second piston having a greater effective working area than the third piston, a working fluid chamber located between the cylinders of the first and second units, through which the

piston rod passes, the cylinder of the second unit being provided with a fluidic connection between it and the fluid chamber, the fluid chamber and the cylinder of the second unit containing a common working fluid, the piston rod being provided with a reduced cross-section portion between the pistons of the third and second units, the reduced cross-section portion residing within the fluidic connection when the piston rod is at the unactuated position of a working cycle, in order that there be fluidic communication between the chamber and the cylinder of the second unit, the third piston and cylinder unit being constituted by the unreduced cross-section portion of the piston rod and the fluidic connection, the third piston and cylinder unit only becoming operative as such at a predetermined position of the piston rod as it moves in the working stroke direction from the unactuated position, the second piston and cylinder arrangement being provided with limited working fluid flow-by during a working stroke to allow continued movement of the piston rod, in the working stroke direction, under impetus from a fluid pressure supplied to the first piston and cylinder unit to produce a working stroke cycle, and wherein a first increase in pressure of the working fluid in the cylinder of the second unit is produced by the initial movement of the piston of that unit and after movement of the piston rod a greater distance, in the working stroke direction, than said predetermined position, the pressure of the working fluid in the cylinder of the second unit is further increased and is primarily solely determined by the third piston and cylinder unit, means being provided to utilize the pressurized working fluid in the second unit.

4,271,672

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS TURBOCHARGER

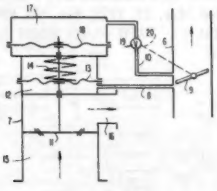
Gert Withalm, Stuttgart, and Hermann Hiereth, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 896,031

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716470

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **3 Claims**



1. A mixture-compressing internal combustion engine which includes a means for forming a fuel-air mixture, and an exhaust gas turbocharger means operatively connected with an exhaust gas system of the internal combustion engine, the exhausted gas turbocharger means including a compressor means operatively connected with an inlet system of the internal combustion engine and a turbine means, characterized in that a bleeder valve means is operatively connected to the turbine means and inlet system of the internal combustion engine, the bleeder valve means includes first means responsive to a vacuum in the inlet system for by-passing exhaust gases from the exhaust gas system about the turbine means of the exhaust gas turbocharger means during a partial load operation of the internal combustion engine, the bleeder valve means includes second means responsive to a predetermined pressure in the inlet system for limiting a maximum charging pressure of the turbocharger means during a full load operation of the internal combustion engine, wherein a shifting valve means is associated with said first means for assuring the operation of said first means solely at the partial load operation.

4,271,673

STEAM TURBINE PLANT

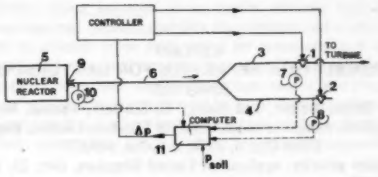
Karel Skala, Windisch, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 15, 1979, Ser. No. 12,449

Claims priority, application Switzerland, Feb. 21, 1978, 1840/78

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—660 **3 Claims**



1. A steam supply system for a steam turbine plant of the type having a turbine intake valve and a bypass valve to control the flow of steam from a steam generator, said system comprising:

(a) means for sensing steam pressure on the upstream side of said turbine intake valve;

(b) means for sensing steam pressure on the upstream side of said bypass valve;

(c) means for sensing steam pressure at said steam generator; and

(d) regulator means for controlling the operation of said valves in response to the difference between the arithmetical mean of said sensed pressures and a pressure set point.

4,271,674

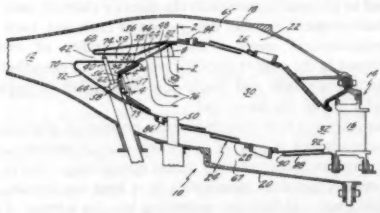
PREMIX COMBUSTOR ASSEMBLY

Richard L. Marshall, Manchester, Conn., and Kenneth A. Cashman, Scarborough, Me., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 515,750, Oct. 17, 1974, abandoned. This application Aug. 9, 1976, Ser. No. 712,575

Int. Cl.³ F23R *3/42*

U.S. Cl. 60—737 **12 Claims**



1. An improved annular combustor for a turbine type power plant having an inner casing and outer casing defining an annular chamber, liner means closed at the forward end and opened at the rearward end which end is directly communicating with the turbine of the power plant disposed in said annular chamber defining a combustion zone, a premix passage formed adjacent the closed end of said liner by said liner and an annular wall surrounding said liner, a baffle at the downstream end of said premix passage having openings whose axis is at an angle relative to the axis of the combustion zone interconnecting said passage with said combustion zone so as to discharge a fuel/air mixture into the combustion zone in a forward to rearward direction with radial component creating local eddies on the downstream side of said openings without incurring large recirculating zones, at least one secondary fuel nozzle in said premix passage for admitting fuel upstream of

said baffle when said power plant is operating at high power, at least one primary fuel nozzle operable independently of said secondary fuel nozzle disposed in proximity to the closed end of said liner for admitting fuel in the combustion zone forwardly and radially of the openings in said baffle when said power plant is operating at low power and said secondary nozzle being disposed forwardly and radially relative to said primary nozzle.

4,271,675

COMBUSTION APPARATUS FOR GAS TURBINE ENGINES

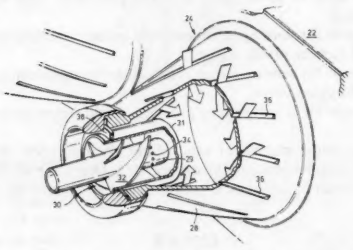
Bryn Jones, Belper, and Sidney E. Slattery, Foston, both of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 6, 1978, Ser. No. 949,077

Claims priority, application United Kingdom, Oct. 21, 1977, 43910/77

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—737 **13 Claims**



1. Combustion apparatus for a gas turbine engine comprising:

an annular flame tube having an upstream end and a downstream end and a primary zone adjacent the upstream end thereof;

a plurality of circumferentially spaced hollow frusto-conical members secured to the upstream end of said flame tube and in communication with the interior thereof, each said frusto-conical member being open at each end, each said frusto-conical member having a plurality of orifices formed in the wall thereof for passage of air therethrough tangentially into said frusto-conical member to impart a swirl within the same; and

an air inlet and fuel injection means positioned adjacent the narrower end of each of said frusto-conical members, said air inlet and fuel injecting means comprising a sleeve and a central fuel duct terminating in at least one nozzle, said sleeve and said fuel duct extending into the interior of said frusto-conical member, and a plurality of air swirling vanes positioned between said fuel duct and said sleeve, said air swirling vanes being arranged to impart a swirl to air from said air inlet and fuel from said nozzle in an opposite direction to the swirl of air caused by air entering through said orifices in said frusto-conical member to promote a mixing of fuel and air and a degree of swirl to the fuel and air mixture entering the primary zone of said flame tube while discouraging fuel from adhering to an interior surface of the wall of said frusto-conical member by a delay of the spread of fuel from the core of fuel and air issuing from the air inlet and fuel injecting means, thereby maintaining a relatively rich fuel and air mixture in the core and stability in burning in the primary zone of said flame tube over a complete power range of the gas turbine engine.

4,271,676

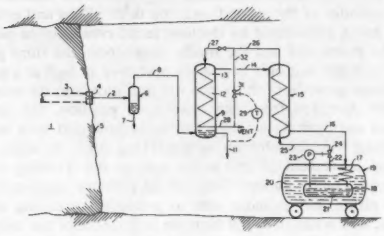
METHOD AND APPARATUS FOR RECOVERING NATURAL GAS IN A MINE

Leonard J. Hvizdos, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 29, 1979, Ser. No. 88,898

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—55 **6 Claims**



1. A method of recovering a hydrocarbon gas in a subterranean mine comprising:

(a) accumulating said hydrocarbon gas in a collection zone in said mine,

(b) withdrawing said hydrocarbon gas from said collection zone to form a gas stream,

(c) passing said stream in indirect heat exchange with cryogenic fluid selected from cryogenic liquid and vapor from cryogenic liquid to liquefy said hydrocarbon gas and form liquefied hydrocarbon gas,

(d) accumulating said liquefied hydrocarbon gas in a transportable vessel, and

(e) transporting said liquefied hydrocarbon gas out of said mine in said transportable vessel.

4,271,677

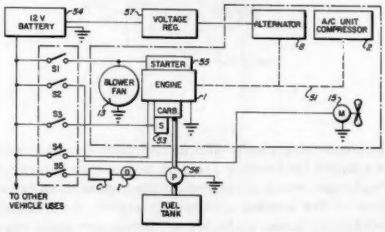
SELF-CONTAINED ROOF-MOUNTED VEHICLE AIR-CONDITIONING SYSTEM

Forrest Harr, 3244 W. Columbine Dr., Phoenix, Ariz. 85029

Filed Mar. 27, 1978, Ser. No. 890,201

Int. Cl.³ F25B *49/00*; B60H *3/04*

U.S. Cl. 62—127 **1 Claim**



1. A roof-mounted, self-contained air-conditioning system for cooling air drawn from the interior of a vehicle and directing said cooled air back into said vehicle, said vehicle having

a prime mover for said vehicle,

a primary electrical system, driven by said prime mover, for generating and storing electrical energy, and

a plurality of electrical accessories, powered by the electrical energy generated and stored by said primary electrical system,

said self-contained air-conditioning system including:

(a) an air refrigeration system comprising compressor, evaporator and condenser means and fan and duct means oper-

atively associated therewith, for removing air from the interior of said vehicle, cooling said removed air and returning the cooled air to the interior of said vehicle, said duct means having intake and return vents mounted in the ceiling of said vehicle;

(b) an electrical generator;

(c) a gasoline engine, provided with a self-starter, for driving

(i) said compressor means, and

(ii) said electrical generator;

(d) pulley means for transmitting motive power from said engine to said compressor means and said electrical generator;

(e) circuit means for

(i) providing electrical power from said electrical generator to said fan means; and

(ii) providing supplemental electrical power from said electrical generator to the primary electrical system of said vehicle;

(f) means for controlling and monitoring said self-contained air conditioning system, adapted for mounting within the operator's compartment of said vehicle, said means including switch means for starting said auxiliary gasoline engine and for energizing said fan means and means for indicating the running condition of said engine; and

(g) means for warning the operator of said vehicle when preventive maintenance of said self-contained air conditioning system is required, said warning means including clock means for maintaining a cumulative record of the time said air conditioning system has been operated.

4,271,678

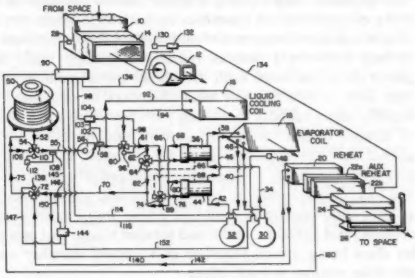
LIQUID REFRIGERATION SYSTEM FOR AN ENCLOSURE TEMPERATURE CONTROLLED OUTDOOR COOLING OR PRE-CONDITIONING

Ralph C. Liebert, Worthington, Ohio, assignor to Liebert Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 779,743, Mar. 21, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,600

Int. Cl.[3] **F25B** *29/00;* **F25D** *17/02*

U.S. Cl. 62—173 **11 Claims**



1. In an air conditioning system of a variety treating air within zone to achieve a predetermined temperature therewithin, said system having refrigeration components including operatively associated compressor means, condenser means and an evaporator coil, means for circulating return air from an input through said evaporator coil, a heat exchanger situated within an ambient environment remote from said zone and a liquid transfer circuit including input and output conduits for circulating a heat exchange fluid between said heat exchanger means and said condenser means, the improvement comprising:

liquid cooling coil means coupled in liquid exchange relationship within said liquid transfer circuit and situated to confront and cool said return air prior to the passage thereof through said evaporator coil;

cooling valve means coupled with said output conduit and actuable to effect a select passage of said heat exchange fluid through said liquid cooling coil means;

sensor means having an output corresponding with the temperature of said heat exchange fluid within said output conduit; and

control means responsive to the temperature of said return air and to said sensor means output for actuating said cooling valve means when the temperature of said heat exchange fluid within said output conduit is lower than the temperature of said return air, said cooling valve means being actuated to an extent wherein said liquid cooling coil means capability for cooling said confronted air is utilized when said return air temperature is above said predetermined temperature and said operatively associated compressor means, condenser means and evaporator coil means are operated to cool said air when said liquid cooling coil means' capability is inadequate to cause said return air to attain said predetermined temperature.

4,271,679

HEATING INSTALLATION

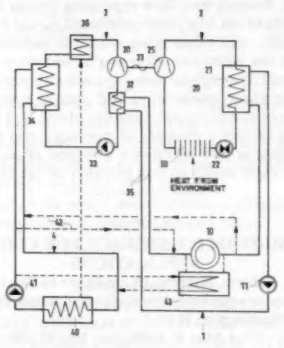
Otmar U. Schäfer, Pienzenauerstrasse 9, 8000 Munich 80, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,285

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829134

Int. Cl.[3] **F25B** *27/02*

U.S. Cl. 62—238.4 **17 Claims**



1. A heating installation comprising a first circuit with a first heat carrier, a second circuit for heating the first heat carrier and with a second heat carrier in the form of a low boiling coolant, said second circuit comprising a heat pump and a compressor, a prime mover for driving said compressor, a third circuit with a third heat carrier for driving said prime mover, a fourth circuit with a fourth heat carrier heatable by a heat source and for heating said third heat carrier, said second and third heat carriers being separated from each other, an evaporator provided in said second circuit, said evaporator being feedable with heat from the environment, and means adapted to establish direct heat exchange between said first and fourth heat carriers.

4,271,680

REFRIGERATED SHOW CASE

Masashi Karashima, 88-5, Nakano, Ebina-shi, Kanagawa-ken, Japan

Filed Aug. 7, 1979, Ser. No. 64,629

Claims priority, application Japan, Jul. 3, 1979, 54-83442

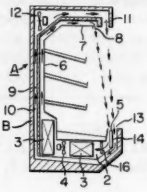
Int. Cl.[3] **A47F** *3/04*

U.S. Cl. 62—256 **2 Claims**

1. In a refrigerated show case of the type wherein a cold air flow for refrigerating the interior of the show case is circulated

through a duct disposed along a bottom wall, a rear wall and a top wall of the show case and across a front opening thereof, and wherein said duct has therein an evaporator for cooling the show case, the improvement comprising:

first and second frosting and flow-regulating means, disposed in said duct upstream of said evaporator, for substantially dehumidifying said cold air flow and causing moisture in said cold air flow to frost on said first and second frosting and flow-regulating means, while substantially preventing frosting on said evaporator, and for equalizing the flow rate of said cold air flow throughout the entire transverse cross-sectional area of said duct, such that any moisture remaining in said cold air flow after the



substantial dehumidification thereof by said first and second frosting and flow-regulating means will not be concentrated at any area of said evaporator, thereby preventing localized frosting on said evaporator;

said first frosting and flow-regulating means comprising a plurality of net-like plates positioned in said duct to extend vertically, said plates being spaced at pedetermined intervals in the widthwise direction of said show case; and

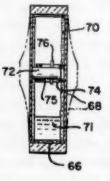
said second frosting and flow-regulating means comprising a net-like plate positioned in said duct at a location downstream of said plurality of net-like plates, said net-like plate having therein a plurality of openings, said net-like plate extending in said widthwise direction of said show case and at right angles to said plurality of net-like plates.

4,271,681

LONG-TERM ICE STORAGE FOR COOLING APPLICATIONS

William W. Schertz, Batavia, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 8, 1979, Ser. No. 37,078
Int. Cl.[3] F25D *23/12*
U.S. Cl. 62—260 **8 Claims**



1. A device for cooling a material and for later utilization of this stored cool, comprising:

a tank containing a fluid, and at least one thermal diode in the form of a reflux condenser heat pipe which penetrates said tank and whose lower end is immersed in said fluid, said pipe including a low boiling point material and a wick confined to said lower end, said wick enhancing the dispersing of said low boiling material over the surface of said lower end in contact with said fluid, the upper end of said pipe extending above said tank and being exposed to the ambient environment, said pipe being responsive to the temperature of the ambient, being less than that of the fluid to transfer heat from said fluid to the ambient and said pipe being responsive to the temperature of the ambient being higher than that in the fluid to resist transfer of heat from the ambient to the fluid, and utilization means coupled to said tank for utilizing the cold stored in said fluid by action of said pipe.

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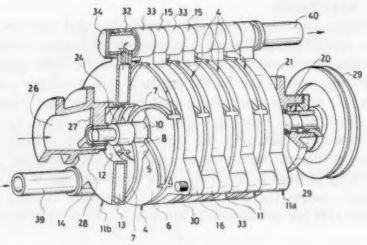
COOLING APPARATUS FOR VISCOUS LIQUIDS

Kunimichi Seki, Tokyo, Japan, assignor to Hiroshi Takeuchi, Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,710
Claims priority, application Japan, Oct. 27, 1978, 53-131709
Int. Cl.[3] F25C *1/14*
U.S. Cl. 62—354 **3 Claims**



1. Cooling apparatus for viscous liquids comprising: a fixed casing having a viscous liquid inlet and a viscous liquid outlet to enable a viscous liquid to be cooled to flow through the interior of said casing; a shaft rotatably mounted on said casing and extending through the interior thereof; a plurality of generally annularly shaped impeller discs affixed to said shaft for rotation therewith and axially spaced apart along the length of said shaft; coolant chamber means sealed in fluid-tight relationship relative to the interior of said casing for passing a coolant fluid through said casing in heat-transfer relationship with said viscous liquid; said coolant chamber means comprising a plurality of coolant fluid chambers each arranged between a pair of said impeller discs, each of said coolant fluid chambers being defined between a pair of radially extending walls having planar outer surfaces, with the planar outer surfaces of adjacent ones of said coolant fluid chambers having one of said impeller discs radially extending therebetween; and a plurality of scraper blades formed on each of said impeller discs and affixed to said impeller discs for rotation therewith, said scraper blades being arranged to extend radially from said shaft and to protrude axially to both sides of said impeller discs into at least close proximity with said planar outer surfaces of said coolant fluid chamber walls; said scraper blades and said impeller discs being joined together as a unitary member and immovable relative to each other.

4,271,683

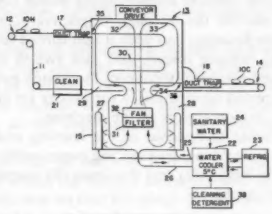
HIGH HUMIDITY FOOD CHILLING SYSTEM

Charles E. Williams, Moorefield, W. Va., assignor to Hester Industries, Inc., Moorefield, W. Va.

Filed Jul. 26, 1979, Ser. No. 60,987
Int. Cl.[3] F25D *17/02*
U.S. Cl. 62—374 **17 Claims**

1. A cooling system for quickly cooling products such as food products and the like, comprising in combination, a chilling chamber, a continuously running conveyor belt for carrying products thereon in a pathway passing through said chilling chamber to carry warm products therethrough for cooling down to a predetermined temperature, and a cooling system for cooling the products on said conveyor belt as they pass thorugh the chilling chamber including means passing cold

moist air through the chilling chamber at a low temperature and high humidity in an air flow path about the products on said conveyor thereby to contact and chill the products



quickly without dehydration, refrigeration means consisting of means for cooling water, and means for spraying the cooled water as a mist into the circulating air passed over the products downstream of the means for cooling water.

4,271,684

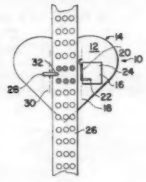
LOCKET ASSEMBLY

Clarence F. Tisdale, 30 Summit Ave., Goose Creek, S.C. 29445

Filed Apr. 2, 1979, Ser. No. 26,120

Int. Cl.[3] A44C *1/00*

U.S. Cl. 63—19 **8 Claims**



1. A locket assembly comprising a locket body, a lid, said lid hingeably secured to said body, a plate, means securing said plate to an exterior surface of said body for pivoting between an open and a closed position with respect to said surface, means to bias one end of said plate outwardly from said exterior surface toward said open position, a bar, said bar pivotally secured to said surface, means to bias one end of said bar towards said surface, whereby said one end of said bar is adapted to clasp said one end of said plate in said closed position maintaining said one end of said plate adjacent said surface, said plate being configured to be concealed behind said lid and said body when disposed in said closed position means comprising an element for joining said body to a third element, and means on said body to removably secure said joining element to said body.

4,271,685

DOUBLE-RING UNIVERSAL JOINT

Hans Lindenthal, Heidenheim, and Martin Harz, Steinheim, both of Fed. Rep. of Germany, assignors to Voith Transmit GmbH, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,232

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809665; Feb. 21, 1979, 2906600

Int. Cl.[3] F16D *3/26*

U.S. Cl. 64—17 R **28 Claims**

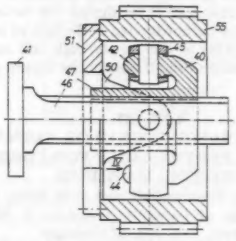
1. A universal joint subassembly for a shaft comprising:

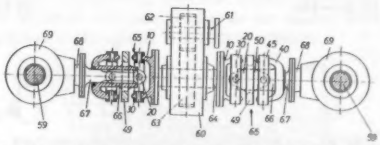
a first and a second joint yoke; each said joint yoke including two spaced apart arms;

an intermediate member, generally in the form of a ring; said intermediate member having an open area defined by the annulus of said ring; said ring having two pairs of pivots defined thereon, with each said pivot pair being defined on a respective axis extending across said intermediate member;

each said arm of a said yoke being pivotally supported at one said pivot, and the other said arm of the respective said yoke being pivotally supported on the other said pivot of the respective said pair thereof;

said first yoke including a shaft receiving hub thereon, with a shaft receiving opening defined therein, through which a shaft may be axially moved for being telescoped;





a shaft in said opening and being axially shiftable with respect to said hub; said shaft being one part of the shaft with which said subassembly is used; said hub and said one shaft part being placed such that said one shaft part extends through said ring open area;

a second part, with which said universal joint subassembly is used, being connected to said second yoke.

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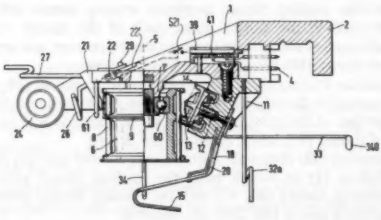
THREAD OR YARN SUPPLY APPARATUS WITH MOVABLE THREAD SUPPLY GUIDE MEANS, PARTICULARLY FOR CIRCULAR KNITTING MACHINES

Gustav Memminger, Freudenstadt, and Falk Kühn, Kiebingen, both of Fed. Rep. of Germany, assignors to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,995

Int. Cl.[3] D04B *15/44, 15/48*

U.S. Cl. 66—146 **25 Claims**



1. Drag compensated thread or yarn supply apparatus, particularly for a circular knitting machine in which thread (30) is supplied to the apparatus in a supply path, having

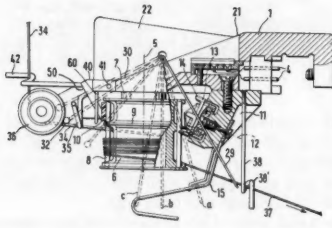
a holder (1) for assembly to the machine;

a thread supply drum (6) rotatably journalled on the holder;
a thread supply guide element (26, 27) guiding the thread (30) to the drum to wind a storage winding (31) thereon;
thread take-off guide means (15, 32) guiding thread being taken off the drum;
a thread brake element (24) located in the supply path of the thread (30) to the drum (6),
a support member (21) positioned adjacent the drum (6) in the supply path of the thread the thread brake element (24) being secured to and supported on said support member,
and comprising, in accordance with the invention,
means (22) for movably securing said support member (21) to the holder for limited deflecting movement backwardly—with respect to feed of the thread—in the supply path of the thread, to permit limited deflection of said thread brake element (24) in the supply path and accomodate changes in tension of the thread in the supply path.

4,271,687
RAPID MAINTENANCE THREAD OR YARN SUPPLY APPARATUS, PARTICULARLY FOR CIRCULAR KNITTING MACHINES

Gustav Memminger, Freudenstadt, and Falk Kühn, Kiebingen, both of Fed. Rep. of Germany, assignors to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,996
Int. Cl.³ D04B *15/44, 35/14*
U.S. Cl. 66—146 **24 Claims**

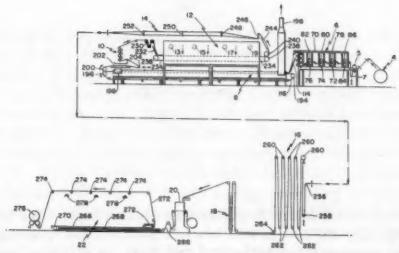


1. Rapid-maintenance thread or yarn supply apparatus, particularly for a circular knitting machine having
a holder (1) having a rear portion (2, 3) adapted for assembly to the machine;
a thread supply drum (6) rotatably journalled on the holder;
thread supply guide means (35, 36, 42) having, in operation of the machine, a predetermined position relative to the axis of rotation of the drum and guiding the thread in a supply guide path to the drum to wind a storage winding (43) thereon;
thread take-off guide means (15, 38, 291) having, in operation of the machine, a predetermined position relative to the axis of rotation of the drum and guiding thread being taken off the drum in a take-off guide path;
movable leading thread presence sensing means (30, 32) located in the supply guide path of the thread and in advance of the storage drum to sense presence and tension of thread (34) being supplied to the drum;
movable trailing thread presence sensing means (29, 290) located in the take-off guide path of the thread and downstream of the storage drum to sense presence and tension of thread (37) being taken off the drum;
a housing (22) removably attached to a front portion of the holder (1) to which both the leading thread presence sensing means (30, 32) and the trailing thread presence sensing means (29, 290) are secured;
a thread supply portion (40) forming at least part of said thread guide means, pivotally secured to the housing and pivotable about a pivot axis (41) transverse to the axis of rotation of the drum, and including a thread drag sensing means (36);
switch means (S29, S30, S40) located in said housing, operated by the respective thread presence sensing means and the thread drag sensing means;
separable and engageable connecting contact means located, respectively, on said housing and on the holder;
and relatively slidable interengaging means (24, 25) on the holder, and on the housing, respectively, to removably secure the housing, and with it said thread sensing means, said drag sensing means, and said switch means to the holder and electrically connect the switch means to a stop motion circuit connection in the holder for connection to the step motion system of the machine;
to permit separate removal of the housing and with it the thread presence and drag sensing means without disassembly of the holder (1) and the drum (6) journalled therein from the machine.

4,271,688
APPARATUS FOR TREATING PLAITED YARNS

John G. Tillotson, Dalton, Ga., assignor to Tillotson Corporation, Everett, Mass.

Continuation of Ser. No. 818,860, Jul. 25, 1975, abandoned, which is a continuation of Ser. No. 601,393, Aug. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 570,765, Apr. 23, 1975, Pat. No. 3,981,163, which is a division of Ser. No. 432,449, Jan. 11, 1974, Pat. No. 3,898,035. This application Mar. 2, 1979, Ser. No. 17,023
Int. Cl.³ D06B *3/06, 21/00*
U.S. Cl. 68—5 D **4 Claims**



1. Apparatus for treating yarn ends comprising:
means conveying the yarn ends from a source thereof to a first roller positioned to lead the yarn ends from the source, the yarn ends being trained on the roller and the roller letting the yarn ends fall downwardly by gravity upon exit therefrom;
first restraining means positioned below the first roller to receive the yarn ends and restrain their motion as they fall downwardly;
a steam chamber for treating the yarn ends and having entrance and exit ends;
a first conveyor belt passing through said entrance end into the steam chamber and therefrom through its exit end, said conveyor belt being positioned to receive the yarn ends in overlapping plaits thereon as the yarn ends leave the first restraining means;
first nip rolls at the exit end of the steam chamber through which the conveyor belt passes, and being positioned so that the plaits of yarn pass through the nip of said rolls before leaving said conveyor belt;
means for removing the yarn ends under tension from the first nip rolls, removing the yarn ends from the belt substantially as soon as the plaits pass through said nip and equalizing their lengths;
yarn washing apparatus adjacent said nip rolls;
yarn drying apparatus adjacent said washing apparatus;
a second roller positioned to receive the yarn ends from the washing apparatus, the yarn ends being trained on the

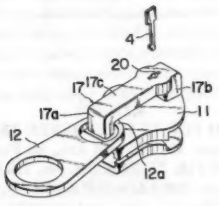
second roller and the second roller letting the yarn ends fall downwardly by gravity upon exit and therefrom;
second restraining means positioned below the second roller to receive the yarn ends and restrain their motion as they fall downwardly;
a drying chamber for drying the yarn ends and having entrance and exit ends;
a second conveyor belt passing through said lastmentioned entrance end into the drying chamber and therefrom through its exit end, the second conveyor belt being positioned to receive the yarn ends in overlapping plaits thereon as the yarn ends leave the second restraining means;
second nip rolls at the exit end of the drying chamber through which the second conveyor belt passes, and beings positioned so that the plaits of yarn pass through the nip of said rolls before leaving the second conveyor belt; and
means for removing the yarn ends under tension from the second nip rolls, removing the yarn ends from the belt substantially as soon as the plaits pass through said nip and equalizing their lengths.

4,271,689

SLIDER WITH A BUILT-IN LOCKING DEVICE IN A SLIDE FASTENER

Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,977
Claims priority, application Japan, Mar. 7, 1978, 53/28757[U]
Int. Cl.[3] E05B *67/38*
U.S. Cl. 70—68 **2 Claims**



1. A slider with a built-in locking device in a slide fastener which comprises:
(a) a slider body with the locking device built within an element guide thereof and provided with a key hole opening in the front half of the upper surface thereof,
(b) a support member for a pull tab in a form of a shackle extending substantially over whole length of the slider body comprised of two upright leg portions positioned adjacent the rear and the front ends respectively of the upper surface of the slider body and an arm spanned between the two upright leg portions, at least one of the upright leg portions being integrally fixed to the slider body and the upright leg portion positioned in the front end of the slider body being provided with a key guide leading to the key hole, and
(c) a pull tab having a ring end portion in engagement with the support member.

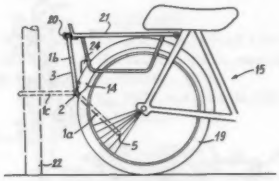
4,271,690

ANTITHEFT DEVICE FOR TWO-WHEELED VEHICLES

Christian Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

Filed Jun. 25, 1979, Ser. No. 51,751
Claims priority, application France, Sep. 4, 1978, 78 25385
Int. Cl.[3] B62H *5/00, 5/16;* **E05B** *71/00*
U.S. Cl. 70—233 **8 Claims**

1. An antitheft device for two-wheeled vehicles having a longitudinal plane of symmetry, the device comprising a U-shaped fork whose central portion is articulated on the vehicle about an axis substantially perpendicular to the plane of symmetry of the vehicle and whose two branches are rigid and pivot about said axis which is defined by said central portion in respective planes substantially parallel to the plane of symmetry and are located on respective sides of this plane between a first position where ends of said branches are located in vicinity of respective sides of a wheel of the vehicle, a second



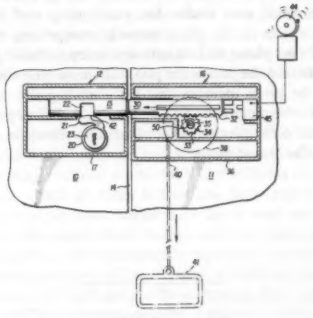
position where said ends straddle a rigid support member and a third position where said branches are positioned with their ends separated lengthwise from the vehicle so as to straddle a device independent of and spaced from the vehicle, and a locking member able to connect said ends of said branches, said locking member extending between spokes of the wheel in said first position, cooperating with said support member in said second position, and straddling a device spaced from and independent of the vehicle in said third position.

4,271,691

EMERGENCY RELEASE FOR DEADLOCKS

Emanuel L. Logan, Silver Spring, Md., assignor to Reliable Security Systems, Inc., Columbus, Ohio

Filed Nov. 13, 1979, Ser. No. 93,446
Int. Cl.[3] E05B *63/00;* **E05C** *13/00*
U.S. Cl. 70—422 **10 Claims**



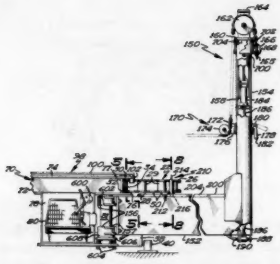
1. An emergency release device for a deadbolt wherein the deadbolt is mounted on a first member and secures the first member to a second member by spanning a gap therebetween and seating in a keeper in the second member, the device comprising;
a key lock;
a yieldable means connecting the key lock to the bolt for projecting and retracting the deadbolt upon turning a key in the key lock;
emergency operating means for moving the deadbolt from the keeper by overcoming the resistance of the yieldable means whereby, in an emergency situation, the first member can be unlocked from the second member to move with respect to the second member.

4,271,692

APPARATUS FOR PIVOTALLY INTERCONNECTING

Gerald A. Specktor, 409 Cleveland Ave. S., St. Paul, Minn. 55105

Division of Ser. No. 496,848, Sep. 12, 1974, Pat. No. 4,151,737.
This application Mar. 12, 1979, Ser. No. 19,818
Int. Cl.[3] B21D *1/14*
U.S. Cl. 72—447 6 Claims



1. Apparatus for pivotally interconnecting force applying means to an apparatus for repairing and straightening the body and frame of a wheeled vehicle comprising, in combination: a small cylindrical pivot member mounted to the apparatus for repairing and straightening; a connector arm extending from the force applying means to a point adjacent the pivot member; and means for pivotally mounting the connector arm to the pivot member and for allowing the counterforce applied to the connector arm by the force applying means to be conveyed to the pivot member from any direction comprising, in combination: a first clamp member pivotably connected about the pivot member; a first ring-sleeve type bearing located between the first clamp member and the pivot member; a second clamp member pivotably connected about the pivot member and spaced from the first clamp member; a second ring-sleeve type bearing located between the second clamp member and the pivot member; and means for positioning and leveling the connector arm on the pivot member comprising, in combination: a thrust plate; and adjustment screws abutting the thrust plate, wherein the means for pivotally mounting the connector arm to the pivot member and for allowing the counterforce applied to the connector arm by the force applying means to be conveyed to the pivot member from any direction operatively rests on the thrust plate.

4,271,693

DEVICE FOR TESTING SMOKE DETECTOR ALARMS

Donald R. Bute, 115 W. South Ave., Flora, Ill. 62839

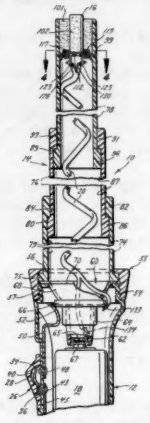
Filed Dec. 10, 1979, Ser. No. 101,483
Int. Cl.[3] G01M *19/00;* G01N *37/00*
U.S. Cl. 73—1 G 6 Claims

1. A device for testing smoke detector alarms comprising:

(a) a housing;

(b) an extendable section mounted upon the housing extendable into a long position and to a short position or shorter length than the long position;

(c) a combustible member mounted on the extendable section for creating smoke by smoldering;



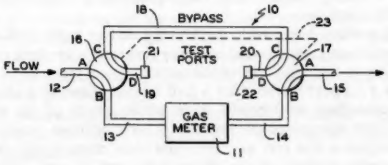
(d) means for applying heat to the combustible member to cause it to smolder, comprising an electrical heating element.

4,271,694

SYSTEM FOR IN SITU METER TESTING

A. Noel J. Pearman, 2087 Bayard Ave., St. Paul, Minn. 55116

Filed Feb. 22, 1980, Ser. No. 123,585
Int. Cl.[3] G01F *25/00*
U.S. Cl. 73—3 6 Claims



1. A method for in situ testing of fluid to flow meters comprising the steps of:

providing a pair of 4-way, dual-position valve means in fluid supply line flanking said meter;

providing a common by-pass line connecting one port of each of said valves;

providing an outlet test port at the remaining port of each of said valves;

maintaining said valves in a first position whereby flow is normally established along said fluid supply line through said meter;

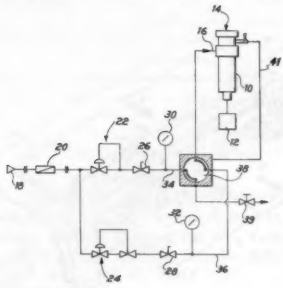
simultaneously switching said valves to a second position whereby said flow is established along said supply line through said by-pass and said meter is connected across said test ports when it is desired to test said meter;

returning said valves to said first position upon completion of said testing.

4,271,695
APPARATUS FOR FEEDING CARRIER GAS TO ON-COLUMN INJECTORS

Giorgio Sisti, Melzo, Italy; Sorin Trestianu, Iselles, Belgium, and Mario Galli, Legnano, Italy, assignors to Carlo Erba Strumentazione S.p.A., Rodano, Italy

Filed Oct. 5, 1979, Ser. No. 82,252
Claims priority, application Italy, Oct. 16, 1978, 23060/78[U]
Int. Cl.[3] G01N *31/08*
U.S. Cl. 73—23.1 4 Claims

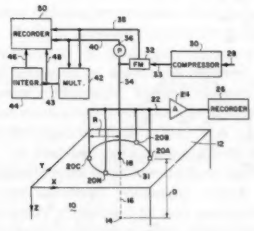


1. An apparatus for feeding with carrier gas "on-column" type injectors for gas-chromatographic columns, wherein, between the gas source and a fitting to the injector, a pressure regulating device is included to introduce gas at constant pressure and a rate regulating device to introduce gas at constant rate, said regulators being positioned in parallel and moreover a switch being provided to alternatively connect in circuit the pressure regulator during the injection of the sample or samples into the column, and the rate regulator during the subsequent processing stage inside the gas-chromatographic column.

4,271,696
METHOD OF DETERMINING CHANGE IN SUBSURFACE STRUCTURE DUE TO APPLICATION OF FLUID PRESSURE TO THE EARTH

Milton D. Wood, Portola Valley, Calif., assignor to M. D. Wood, Inc., Palo Alto, Calif.

Filed Jul. 9, 1979, Ser. No. 56,065
Int. Cl.[3] G01N *19/02, 33/24*
U.S. Cl. 73—37 17 Claims



1. The method of determination of the change in subsurface structure of the earth resulting from the application of fluid pressure at a selected point, at a selected depth, on the earth, comprising the steps of:

(a) positioning in the earth, near the surface thereof, a plurality of sensors for determining the change in angle of tilt of the earth at the positions of said sensors, in a selected array, of known positions with respect to said point of application of said fluid pressure to the earth;

(b) applying fluid pressure to the earth at said selected point, at a selected pressure and flow rate; while

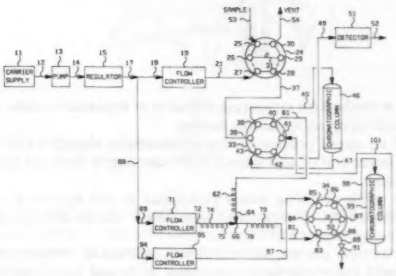
(c) measuring a function of the change in tilt of the earth at said positions of said sensors, and

(d) from the measured changes in tilt of the earth at the positions of said sensors, determining the structural changes in the earth resulting from said applied flow of fluid.

4,271,697
CHROMATOGRAPHIC ANALYSIS

Richard A. Mowery, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 17, 1979, Ser. No. 86,200
Int. Cl.[3] G01N *31/08*
U.S. Cl. 73—61.1 C 10 Claims



8. A method for determining the concentration of at least two components in a sample fluid wherein at least one of said components has a low value of concentration and/or detector sensitivity and at least one of said components has a high value of concentration and/or detector sensitivity, said method comprising the steps of:

passing a first stream of carrier fluid to a first chromatographic separation column means;

injecting said sample fluid into the first stream of carrier fluid flowing to said first chromatographic separation column means;

withdrawing a first effluent stream containing at least one component of said sample fluid, having said low value, from said first chromatographic separation column means and passing the thus withdrawn first effluent stream to a detector which provides at least one first response representative of the concentration of the at least one component of said sample fluid, having said low value, provided from said first chromatographic separation column means;

withdrawing a second effluent stream containing at least one component of said sample fluid, having said high value, from said first chromatographic separation column means;

diluting at least a portion of the thus withdrawn second effluent stream containing at least one component of said sample fluid having said high value;

passing a second stream of carrier fluid to a second chromatographic separation column means;

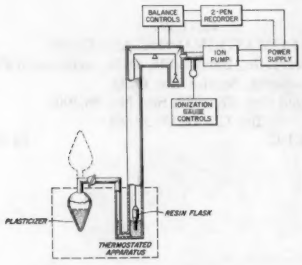
injecting the thus diluted portion into the second stream of carrier fluid flowing to said second chromatographic separation column means; and

passing the second stream of carrier fluid containing the diluted at least one component of said sample fluid, having said high value, from said second chromatographic separation column means to a detector means which provides at least one second response representative of the concentration of the diluted at least one component of said sample fluid having said high value.

4,271,698
APPARATUS TO MEASURE PLASTICIZER ABSORPTION IN POLYMER POWDERS

James A. Wingrave, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Oct. 29, 1979, Ser. No. 88,988
Int. Cl.[3] G01N 5/02
U.S. Cl. 73—74 10 Claims



3. A method for measuring diffusion of liquid into solids, said method using an apparatus having

(a) an upper portion having substantially sloped walls, the lower end of said sloped walls meeting to form an aperature,

(b) solids retaining means positioned at said aperature, said means being permeable to a liquid whose absorption is being measured,

(c) a lower portion substantially cylindrical in configuration, said lower portions connected with said upper portion wherein said aperature is common to both, and wherein

(d) both upper and lower portions are operably connected to a gravimetric scale, such that the total weight of the upper and lower portions, solids retaining means, solid content, and liquid can be weighed, said method comprising

(e) placing a solid into the upper portion of said apparatus, said solids retained by said retaining means,

(f) placing liquid whose diffusion is to be measured around the lower portion of said apparatus, allowing capillary forces to draw said fluid around said solid,

(g) weighing the entire apparatus solid and liquid to obtain a first weight,

(h) waiting a sufficient length of time,

(i) recording a second weight of the entire apparatus liquid and solid, and

(j) determining the difference between the first and second weights to obtain the weight of liquid diffused into solid.

4,271,699
SHEET THICKNESS MONITORING SYSTEM AND METHOD

Harry L. Williamson, P.O. Box 1, Hwy. 1788, Franklin, Ky. 42134

Filed Dec. 7, 1979, Ser. No. 102,108
Int. Cl.[3] G01B 5/06
U.S. Cl. 73—159 1 Claim

1. A method of monitoring the thickness of sheet material comprising the steps of:

moving the sheet material past a measuring station having a sheet thickness measuring means;

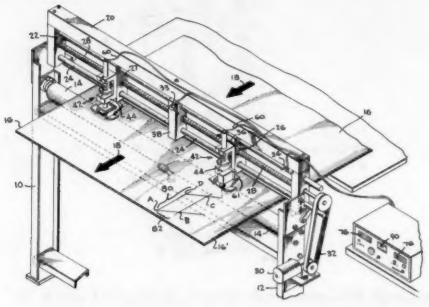
operating said sheet thickness measuring means while moving said sheet thickness measuring means transversely with respect to the direction of sheet movement to provide an instantaneous output signal indicative of the sheet thickness adjacent said measuring means at any given moment;

directing said instantaneous output signal to averaging means for providing an average voltage signal indicative of the average value of said output signal over an immediately preceeding predetermined time period;

monitoring said average signal to actuate warning means in response to said average signal falling below or exceeding preset value.

moving the sheet material past a second sheet thickness measuring means transversely spaced from said first mentioned sheet thickness measuring means;

operating said second sheet thickness measuring means while moving said second sheet thickness measuring means transversely with respect to the direction of sheet movement in a direction opposite the direction of movement of the first mentioned sheet thickness measuring



means to provide second instantaneous output signal indicative of the sheet thickness adjacent said second sheet thickness measuring means at any given moment;

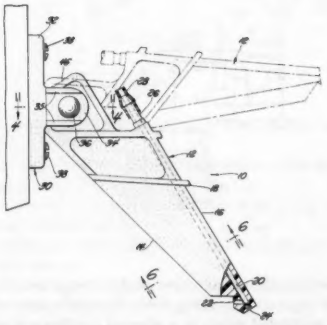
directing said second instantaneous output signal to averaging means for providing a second average voltage signal indicative of the average value of said second instantaneous output signal over an immediately preceeding predetermined time period; and

monitoring said second average signal to actuate said warning means in response to said second average signal falling below or exceeding said preset value.

4,271,700
PITOT TUBE ASSEMBLY

August E. Tschanz, Lansdale, and Robert W. Geiger, Geigertown, both of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Feb. 26, 1980, Ser. No. 124,876
Int. Cl.[3] G01C 21/10
U.S. Cl. 73—182 13 Claims



1. A pitot tube assembly for actuating a marine speedometer, comprising; an elongated blade member having a leading edge and upper and lower ends, said blade member having a passage extending between said upper and lower ends with a portion opening forwardly toward said leading edge, support bracket means rotatably supporting said blade member for impacting

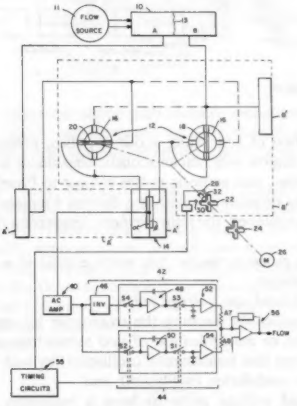
water in the normal down position while allowing said blade member to rotate to a raised position in response to a predetermined force applied against said leading edge thereof, said support bracket means including an integral resilient section and said blade member includes a cam surface engaging said resilient section so that upward rotation of said blade member from said down position toward said raised position moves said cam surface into said resilient section to move the resilient section as the resilient section resists such upward rotation and urges said blade member toward said down position.

4,271,701

GAS FLOW MEASURING SYSTEM

Philip T. Dempster, and John Y. Pun, both of St. Helena, Calif., assignors to Cavitron Corporation, New York, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,741
Int. Cl.[3] G01F *1/38*
U.S. Cl. 73—861.42 **11 Claims**



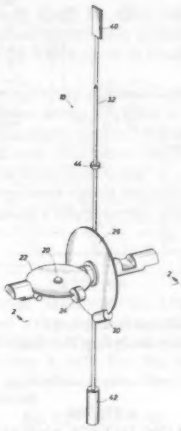
1. In a gas flow measuring system, a pneumotach including means forming a flow channel, means forming a flow restriction in said channel defining on opposite sides thereof first and second portions A, B, a pressure transducer having first and second opposite sides α, β, said pressure transducer being constructed and arranged to deliver an electric signal in response to pressure differential applied thereto, pneumatic switch means for connecting said pressure transducer to said flow channel in the sequence A to α, B to β; A to β, B to α; A to α, B to β; . . . so that said pressure transducer is alternately connected to opposite sides of said restriction, means enclosing said pressure transducer and pneumatic switch means in a sealed chamber solely connected to said pneumotach, means connected to the output of said pressure transducer for developing an electric flow signal in correspondence with the pressure difference applied thereto, means for enclosing the transducer within an enclosed volume including means forming matched chambers A, B, having equal volume on each side of said transducer, means for sampling over a predetermined substantial interval during each alternate connection of said transducer to the electric signal developed thereby and for integrating the valve thereof to develop signals a_n, b_n, means for developing a flow signal from said signals $(a_n - b_m)$.

4,271,702

GRAVITY SENSOR

Lewis A. Manson, 4602 Waring, Houston, Tex. 77027

Filed Oct. 10, 1979, Ser. No. 83,256
Int. Cl.[3] G01M *19/00*
U.S. Cl. 73—382 R **9 Claims**



9. An instrument responsive to horizontal components of gravity acting on the instrument comprising:

(a) a central horizontal shaft;

(b) mounting means for mounting said shaft along a horizontal axis perpendicular to a vertical toward the earth;

(c) movable counterbalance means supported by said shaft and movable to adjust the center of gravity of the test instrument to a specified location vertically aligned with the horizontal axis for said shaft;

(d) an elongate arm having a pair of separated ends supported on said shaft and positioned thereby so that one of said ends is located at a remote location and is adapted to be pulled below said shaft, said end extending therefrom and positioned to rotate said shaft on horizontal variations of gravity;

(e) wherein said shaft is elongate between a pair of spaced, downwardly extending supports which supports comprise a portion of said mounting means;

(f) wherein said supports terminate at the horizontal axis; and

(g) including cooperative support receiving means aligned with the horizontal axis to receive said supports;

(h) knife edge means coinciding with the horizontal axis rotation through a specified angle relative to the horizontal axis, said knife means comprising the sole support for the test instrument and wherein said knife edge means is located on both of said downwardly extending supports.

4,271,703

HIGH TEMPERATURE SAMPLING SYSTEM FOR LIQUID CHROMATOGRAPHY

Lewis B. Roof, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 3, 1979, Ser. No. 81,608
Int. Cl.[3] G01N *1/10*
U.S. Cl. 73—863.11 **20 Claims**

9. A method for obtaining a sample of hot liquid for analysis by liquid chromatography comprising the steps of:

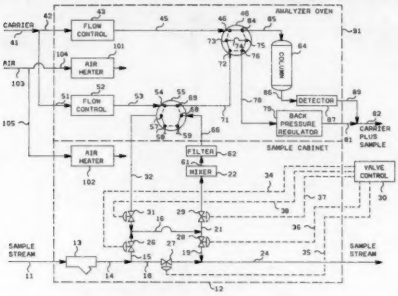
filling a sample conduit means with said hot liquid;

isolating said sample conduit means from the source of said hot liquid;

supplying carrier fluid, which is a solvent for said hot liquid, to said sample conduit means to force the portion of said

hot liquid in said sample conduit means out of said sample conduit means;

mixing said carrier fluid and said hot liquid from said sample conduit means to dilute said hot liquid;



cooling the thus diluted liquid; and

chromatographically analyzing the thus cooled diluted liquid.

4,271,704

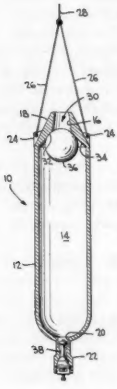
FLUID SAMPLING DEVICE AND METHOD OF SAMPLING FLUID

Beldon A. Peters, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Oct. 5, 1979, Ser. No. 82,341

Int. Cl.[3] G01N *1/12*

U.S. Cl. 73—864.63 **4 Claims**



1. A method of sampling fluid at a predetermined depth with a fluid sampling device including a body having a chamber therein and a sampling passage and control passage communicating with said chamber and a freely movable valve member disposed in said chamber and having a specific gravity less than the specific gravity of the fluid to be sampled and a control valve disposed in said control passage, said method comprising the steps of:

(a) pressurizing the chamber with a gas through said control passage to force said valve member into sealing engagement with said sampling passage, the pressure within said chamber being substantially the same as the pressure of the fluid to be sampled at the predetermined depth;

(b) lowering the fluid sampling device to the predetermined depth in the fluid to be sampled where the fluid pressure on said valve member enables said valve member to move away from said sampling passage and permit the chamber to be filled with said fluid to be sampled, said fluid forcing said valve member floating on said fluid into sealing engagement with the sampling passage when said chamber is filled;

(c) raising the fluid sampling device from the fluid to be sampled; and

(d) discharging the fluid from said chamber.

4,271,705

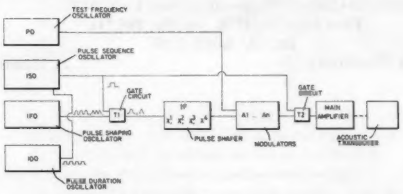
METHOD AND DEVICE FOR GENERATING ACOUSTIC PULSES

Horst-Artur Crostack, Dortmund, Fed. Rep. of Germany, assignor to Karl Deutsch Prüf-und Messgeräte, Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 922,801, Jul. 7, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,832

Int. Cl.[3] G01N *29/04*

U.S. Cl. 73—602 **13 Claims**



1. In a method of generating acoustic pulses, preferably in the ultrasonic region, wherein an acoustic transducer is excited by voltage pulses, said acoustic pulses subject to Fourier integral analysis to determine whether a desired frequency spectrum has been achieved, the improvement comprising the steps of:

providing a monochromatic a.c. voltage train at a desired test frequency;

providing at least one voltage pulse;

producing pulses for exciting the transducer by amplitude modulation or multiplication of said monochromatic a.c. voltage train (the fundamental oscillation) by said voltage pulse (the modulation oscillation); and

adjusting said voltage pulse to have a frequency, shape, exponent and duration so that the corresponding Fourier integral of the fundamental oscillation, the modulation oscillation, transducer characteristic and transfer terms associated with the signal path, provide a desired frequency spectrum for the acoustic signal.

4,271,706

ULTRASONIC SCANNER

Robert S. Ledley, Silver Spring, Md., assignor to Georgetown University, Washington, D.C.

Filed May 3, 1978, Ser. No. 902,740

Int. Cl.[3] G01N *29/00*

U.S. Cl. 73—614 **25 Claims**

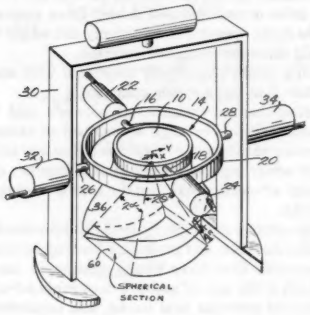
1. An ultrasonic scanner system developing a two-dimensional display of multi-valued signals representative of the varying intensities of ultrasonic signals reflected from three dimensional interfaces within a body, which intensities vary as a function of the angle of incidence of incident ultrasonic signals, said system comprising:

an ultrasonic transceiver for generating ultrasonic signals, directing said ultrasonic signals into said body along a path of predetermined disposition, and generating electrical output signals indicative of ultrasonic signals reflected back to said transceiver from said reflective interfaces;

said transceiver including scanning means for scanning said path of predetermined disposition and thus said ultrasonic signals through a predetermined volume within said body;

position means generating position signals indicative of the relative instantaneous dispositions of said ultrasonic signal path;

gating means, responsive to said position signals and to said transceiver output signals, for selectively passing only output signals representative of reflections from interfaces located within a substantial range of distances varying within predetermined minimum and maximum distances from said transceiver, which distances at any given time are a function of the instantaneous relative disposition of



said ultrasonic signal path thereby generating gated output signals representative of reflections from interfaces within a selected volume having a predetermined contour; and

display means, responsive to said gated output signals and to said position signals providing a two-dimensional display of multi-valued signals having more than 2 values and directly representative of and correlated to the corresponding varying intensities of ultrasonic signals reflected from the three-dimensional interface surfaces in said contoured volume so as to directly present a shaded two-dimensional depiction of said three dimensional interface surfaces.

4,271,707

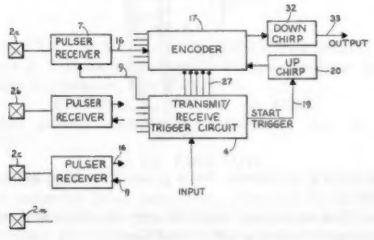
RECEIVED SIGNAL ENCODING AND CORRELATING SYSTEM

Kenneth M. Lakin, Palos Verdes, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Nov. 16, 1979, Ser. No. 95,576

Int. Cl.[3] G01N *29/04*

U.S. Cl. 73—614 **13 Claims**



1. In an ultrasonic pulse-echo inspection system wherein a pulse is transmitted from each of an array of transducers at slightly delayed intervals to arrive at a small focus zone or point simultaneously, the method of encoding, correlating, and decoding the respective return signals received by said transducers from said point which comprises:

a. providing a chirp signal at least as long as the time required from the first to the last return signal received at said transducers;

b. providing a gate signal for each transducer, said gate signal being timed to coincide with the predetermined arrival time of the return signal at its corresponding transducer;

c. mixing said return, chirp and gate signals for each transducer by product means to form a time-gated chirp-modulated return signal for each transducer;

d. combining all said time-gated chirp-modulated return signals from said transducers; and

e. passing said combined signals through a dispersive transversal filter having a characteristic opposite to said chirp signal.

4,271,708

ULTRASONIC MEASURING APPARATUS

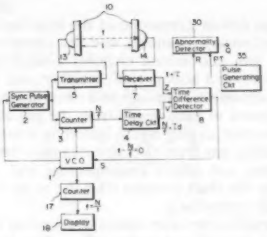
Masaru Kohno, and Yukio Nakagawa, both of Hino, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 3, 1979, Ser. No. 35,467

Claims priority, application Japan, May 16, 1978, 53-57820; May 22, 1978, 53-60745

Int. Cl.[3] G01F *1/66*

U.S. Cl. 73—861.28 **13 Claims**



1. In an ultrasonic measuring apparatus of the type having a pair of transducers disposed oppositely on a pipe through which a fluid to be measured flows and which are so controlled alternately as to convert an input electrical signal to an acoustic signal and to convert a received acoustic signal to a received electrical signal, oscillating means for generating an oscillator output signal having a variable frequency, a counter for counting said oscillator output signal to produce a counter output signal when the count value of said counter reaches a predetermined value, a delay means for delaying said counter output signal and producing a delayed output signal, a transmitter receiving said oscillator output signal for producing said input electrical signal, a time difference detecting means for receiving said delayed output signal and said received electrical signal for detecting the time difference between said delayed output signal and the propagating time required for an ultrasonic wave to propagate through said fluid to be measured, controlling means for controlling the frequency of said oscillating means so as to make said time difference zero, and means for detecting said propagating time in accordance with the frequency of said oscillating means, said ultrasonic measuring apparatus comprising:

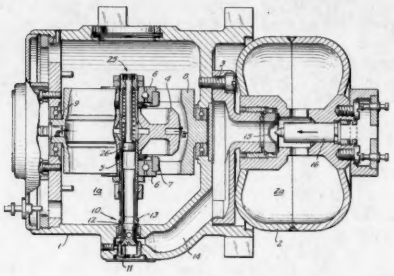
comparing means for comparing a voltage signal corresponding to said time difference with first and second set voltages; and

monitoring means receiving the comparison result from said comparing means for judging whether said fluid flow is propagated in said pipe in a normal condition or in an abnormal condition.

4,271,709
GAS DRIVEN GYROSCOPE

Abe Feldman, Derby, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 20, 1979, Ser. No. 67,978
Int. Cl.[3] G01C 19/12, 19/26
U.S. Cl. 74—5.12 4 Claims



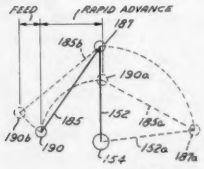
1. In a gas driven gyroscope of the type having a housing with first and second chambers, said first chamber containing a pressurized gas, said second chamber containing a rotatably mounted rotor on a hollow shaft member, said shaft member having gas admission ports and said rotor having gas reaction nozzles disposed to receive gas from the gas admission ports and spin the rotor, caging means including a conduit for selectively admitting gas from said first chamber into said hollow shaft member, and means disconnecting said caging means conduit from the shaft member after the rotor is spinning, the improvement comprising:

pressure responsive valve means disposed on the rotor shaft member, and adpated to shut off gas flow from the hollow shaft member into the rotor nozzles after said caging conduit is disconnected.

4,271,710
TOOL CARRIAGE ADVANCE AND RETRACTION CONTROL

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Aug. 7, 1979, Ser. No. 64,502
Int. Cl.[3] F16H 21/02, 21/52
U.S. Cl. 74—27 47 Claims



1. In a machine tool feed system which comprises a slide base and a tool supporting sliding carriage movably mounted thereon and in which the motion pattern of said carriage comprises a first rapid advance stroke which moves the carriage and tools forward at a relatively high speed to bring the tools into close proximity to the workpiece, and a second forward feed stroke, at the end of the rapid advance stroke, with a relatively slow constant speed during which motion the tools are fed into the workpiece, and a rapid return stroke at a relatively high speed for a return stroke which is the sum of the rapid advance and feed strokes, a drive system for said carriage comprising:

(a) a first drive means mounted to said slide base to generate a smoothly accelerated-decelerated reversible output motion, said drive means being selectively coupled to said carriage to generate said rapid advance and rapid return strokes,

(b) a second drive means mounted to said slide base to generate a predetermined constant speed output motion, said second drive means being selectively coupled to said carriage to generate said feed stroke,

(c) shift means operatively associated with said carriage, said first drive means, and said second drive means, said shift means being operable to selectively and singly couple one of said drive means to said carriage,

(d) adding means operatively associated with said carriage and said first drive means comprising:

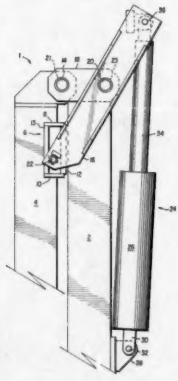
1. adder members interposed between said first drive means and said carriage to maintain an extendible connection between said first drive means and said carriage, said adder members being locked together during said rapid advance stroke and extensible during said feed stroke,

2. regenerative members operatively associated with said adder members and producing, in conjunction with said reversible first drive means, said rapid return stroke which is the sum of said previous rapid advance stroke and said previous feed stroke, said regenerative members operating on said adder members to positively return said adder members to a non-extended position during said rapid return stroke.

4,271,711
180 DEGREE FOLDING DEVICE

Gary J. Vavra, Norwich, Kans., assignor to Green Line, Inc., Harper, Kans.

Filed Feb. 28, 1979, Ser. No. 15,914
Int. Cl.[3] F16H 21/44
U.S. Cl. 74—96 7 Claims



1. A folding mechanism for a ground working implement comprising:

a fixed first section and pivotable second section, said second section including a slot formed therein;

a single pivot member connecting said first and second sections;

a single lever rotatably connected to an end portion of said first section at an intermediate portion of the length of said single lever;

a pin member connected to a first end portion of said single lever and disposed within said slot formed in said second section; and

means directly connected to an end portion of said single lever for rotating said single lever about said first section, mounted on said first section, and for rotation of said lever about said first section so as to pivot said second section at least 180° about said single pivot member connecting said first and second section.

4,271,712

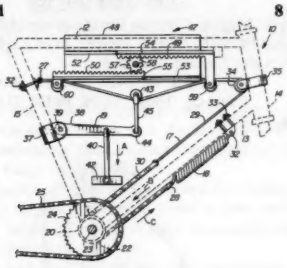
VARIABLE SPEED DRIVE UNIT

Herbert O. White, 4242 E. Wilshire Dr., Phoenix, Ariz. 85008

Filed Apr. 20, 1979, Ser. No. 31,829

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—141 **8 Claims**



1. A variable speed drive unit for translating reciprocal motion into rotary motion and for selectively changing the ratio between the amplitude of the reciprocal motion and the degree of rotation of the rotary motion while said drive unit is in operation, said variable speed drive unit comprising:

(a) a frame,

(b) an elongate flexible power transmission member having,

a. a first end secured to said frame,

b. a second end,

c. a normally straight section intermediate said ends, and

d. a drive section intermediate said straight section and said second end;

(c) biasing means interconnected between the second end of said power transmission member and said frame for exerting tension upon said member;

(d) means for angularly deflecting said straight section thereby urging reciprocal movement of said drive section;

(e) a unidirectional drive element engaged with said drive section of said power transmission member and providing a unidirectional rotary output in response to the movement of said drive section; and

(f) control means carried by said frame for selectively varying the angular deflection of said straight section of said power transmission member.

4,271,713

SPEED- OR MOVEMENT-REDUCING DRIVE

Marinus J. J. Dona, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

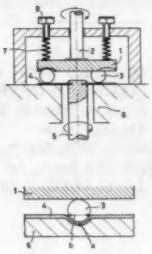
Filed May 25, 1979, Ser. No. 42,656

Claims priority, application Netherlands, Jul. 6, 1978, 7806175

Int. Cl.³ F16H *15/28*

U.S. Cl. 74—198 **5 Claims**

1. A reduction drive comprising a drivable first structural member, a second structural member, an output section, a thin intermediate plate connected to the output section and supported by the second structural member, at least one body of revolution disposed between the first structural member and the intermediate plate, and means for pressing the first member toward the second member so as to press said at least one body against the intermediate plate, wherein the intermediate plate is formed of a material having a modulus of elasticity at least equal to the modulus of elasticity of the material of said second



member, and said means is arranged to pess said at least one body against the plate with sufficient force to deform said plate and second member locally and elastically.

4,271,714

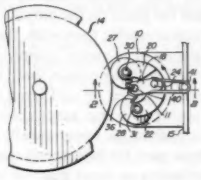
DRIVE MECHANISM

Hans Schmidt, Wood Dale, Ill., assignor to Matsushita Electric Corporation of America, Franklin Park, Ill.

Filed May 16, 1979, Ser. No. 39,515

Int. Cl.³ F16H *15/00, 13/00*

U.S. Cl. 74—202 **3 Claims**



1. A drive mechanism including in combination:

a rotatable drive member having a drive shaft;

a rotatable driven member having a driven surface and mounted for rotation in a position relative to said rotatable drive member so that the driven surface thereof is spaced a predetermined distance from said drive member;

first and second idler wheels each having a circumference greater than said predetermined distance and each having a shaft;

first, second, and third lever means each having first and second ends, with the second ends of each of said first, second, and third lever means being pivotally mounted together, the first end of said first lever means having the drive shaft of said rotatable drive member extending through an opening therein, and the first end of each of said second and third lever means having the shafts respectively of said first and second idler wheels rotatably mounted therein, said second and third lever means having the first ends thereof located on opposite sides of the first end of said first lever means;

resilient spring means provided between the first ends of second and third lever means for urging said first and second idler wheels into engagement with said drive member for free pivotal movement about said drive member when said first and second idler wheels are out of engagement with said rotatable driven member; and

whereby rotation of said rotatable drive member in a first direction causes said first, second, and third lever means to rotate in a first direction until said first idler wheel engages the driven surface of said rotatable driven member and whereby rotation of said rotatable drive member in

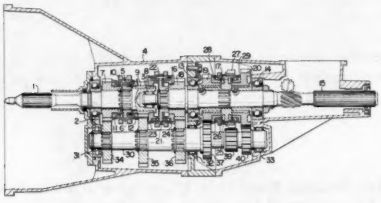
the opposite direction causes said first, second, and third lever means to rotate about said rotatable drive member in the opposite direction until said second idler wheel engages the driven surface of said rotatable driven member.

4,271,715

TRANSMISSION EQUIPPED WITH AUXILIARY SPEED CHANGING GEAR

Hajime Arai, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 18, 1979, Ser. No. 31,135
Claims priority, application Japan, Jul. 4, 1978, 53/81239
Int. Cl.[3] F16H *3/08*
U.S. Cl. 74—360 **3 Claims**



1. In a multiple speed transmission having an output shaft, a countershaft and pairs of meshing gears mounted on said shafts with the gears on the countershaft being non-rotatably mounted thereon and the gears on the output shaft being selectively rotatable or non-rotatable therewith, the combination of auxiliary speed changing gear means comprising:

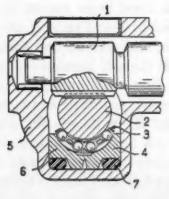
an input shaft coaxial with the output shaft; at least two pairs of meshing gears mounted on said input shaft and on the countershaft, each pair being adapted to transmit torque from said input shaft to the countershaft, one of said pairs including an input gear for high-speed range and the other of said pairs including an input gear for low-speed range, the gears of each of said pairs on the countershaft being non-rotatably mounted thereon, and the gears of each of said pairs on said input shaft being selectively rotatable or non-rotatable therewith.

4,271,716

LOADING MECHANISM FOR RACK AND PINION STEERING

Jean-Jacques Carduner, Sannois, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 30, 1979, Ser. No. 43,756
Claims priority, application France, May 30, 1978, 78 16019
Int. Cl.[3] F16H *19/04;* B62D *3/12*
U.S. Cl. 74—422 **6 Claims**



1. A vehicle steering mechanism including a housing, a drive pinion extending into said housing, a rack moveable within said housing and engageable with said drive pinion and a loading mechanism moveably supporting said rack within said housing, said loading mechanism comprising:

a fixed ball-bearing support having two oval-shaped longitudinal tracks;

a plurality of ball-bearings disposed in and substantially filling said tracks, said ball-bearings contacting said rack at two areas of contact on said tracks; and

a ball-bearing retainer located between said ball-bearing support and said rack, said support and said retainer forming a cradle, said ball bearing retainer including retainer tabs secured to said ball bearing support to form a pre-assembled unit;

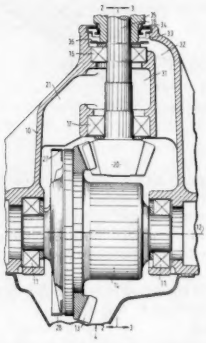
wherein said ball-bearings are alternately loaded and unloaded as they move through said areas of contact.

4,271,717

AXLE ASSEMBLIES

Thomas H. Millward, Sutton Coldfield; David G. Wylie, Erdington, and Philip C. Clarke, Dostill, all of England, assignors to GKN Axles Limited, England

Filed Jul. 10, 1979, Ser. No. 56,328
Int. Cl.[3] F16H *57/04;* F01M *11/02*
U.S. Cl. 74—467 **2 Claims**



1. An axle assembly comprising:

a housing,

a crown wheel and pinion gearing disposed in said housing,

an input element connected to said pinion, and supported in an extension of the housing by bearing means, said bearing means including spaced bearings adjacent to and remote from said pinion,

a differential gearing connected to said crown wheel, said differential gearing including rotary output elements,

said crown wheel having associated therewith a lubricant entraining element,

said housing defining a chamber through which said input element extends between the bearings thereof, and two passages each leading into said chamber and having an entrance with a lip lying close to the periphery of said lubricant entraining element for removing lubricant from a film thereof entrained by said element from a quantity of lubricant in said housing, and for directing such lubricant into the respective passage upon rotation of said lubricant entraining element in respective opposite directions,

said housing further defining in said extension thereof a space through which said element extends on the side of said remote bearing thereof opposite said chamber, and a further passage with an entrance in said space and extending substantially level with said input element to communicate with the housing part containing said crown wheel, and

the vertical dimension of said entrance of said further passage being less than the vertical dimension of said space, and the lower boundary of said entrance being above the bottom of said space, when the assembly is viewed in elevation in an orientation in which the axes of rotation of

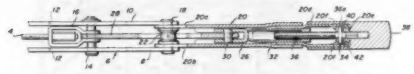
said input element and crown wheel are both substantially horizontal, whereby a quantity of lubricant is retained in said space when the assembly is at rest, for lubricating said remote bearing at start-up.

4,271,718

CABLE TENSION ADJUSTING MEANS FOR A BRAKE CABLE OPERATING LEVER

Robert D. Bopp; David P. Klosterman, and Eugene C. Lipshield, all of Moberly, Mo., assignors to Orscheln Co., Moberly, Mo.

Filed Feb. 26, 1979, Ser. No. 13,825
Int. Cl.³ G05G *1/04*; F16C *1/10*
U.S. Cl. 74—522 **13 Claims**



1. Brake operating apparatus for applying tension to a parking brake cable for motor vehicles or the like, comprising

(a) stationary mounting plate means (**6**) adapted for connection with a frame of the vehicle;

(b) cable connecting means (**16**) connected for sliding movement axially of said mounting plate means, said cable connecting means being adapted for connection with one end of the parking brake cable;

(c) operating lever means (**20**) pivotally connected at one end with said mounting plate means for pivotal displacement between brake-on and brake-off positions, respectively, said operating lever means including at its other end a longitudinally extending tubular portion (**20*d***);

(d) a connecting link (**28**) pivotally connected at one end with said cable connecting means;

(e) adjustable pivot means (**30**) pivotally connecting the other end of said connecting link with said operating lever means, said adjustable pivot means being mounted adjacent the pivot axis of said lever means for displacement axially of said lever means; and

(d) cable tension adjusting means for displacing said adjustable pivot means aially of said operating lever means, whereby the brake cable tension, when the brake cable is in the brake-on position, is a function of the distance between said adjustable pivot means and the pivotal connection between said operating lever and said mounting plate means, said adjusting means including

(1) a rotary screw member (**36**) extending axially within the tubular portion of said operating lever means, said screw member including intermediate its ends an annular collar portion (**36*a***) the outer diameter of which corresponds generally with the inner diameter of said operating lever tubular portion;

(2) means defining an abutment shoulder (**20*f***) within said tubular portion of said operating lever means for rotatably supporting said collar portion and said screw member against axial displacement in the direction of the pivot axis of said lever means;

(3) connecting means threadably connecting said adjustable pivot means with one end of said screw member;

(4) knob means (**38**) containing at one end a bore, said knob means being rotatably mounted on said operating lever with the tubular portion thereof rotatably extending within said bore, said knob means being non-rotatably connected with the other end of said screw member for rotating the same to displace said adjustable pivot means axially of said operating lever means, whereby the brake cable operating means remains functional even upon removal of the knob means from said screw member; and

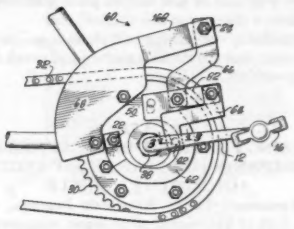
(5) internal friction means for restricting rotation of said screw member relative to said operating lever means.

4,271,719

BICYCLE LEVER ASSEMBLY

Foster King, 1149 N. Hacienda, LaPuente, Calif. 91744

Filed Jun. 13, 1979, Ser. No. 48,083
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—594.2 **6 Claims**



1. An improved bicycle lever transmission assembly for a bicycle wherein a pedal crankshaft has a journalled portion rotatably mounted in a frame and a pair of pedal cranks with pedals extending oppositely from the journal portion, and a drive sprocket having the same rotational axis as and rotatable by the pedal cranks meshes with a drive chain to drive a wheel of the bicycle and is rotatably mounted on the cranshaft journal portion adjacent to one of the pedal cranks, said transmission assembly being intermediate the pedals and drive sprocket and comprising:

a pivot boss extending from one of the pedal cranks in spaced parallel relation with said journal crankshaft portion,

a fixed lever link affixed to the drive sprocket, the sprocket having a pitch diameter beyond which an end portion of the fixed lever link extends, and

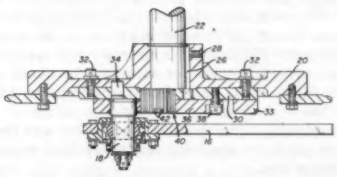
leverage transmission means including a lever linkage interconnected between the pivot boss and the extending end portion of the fixed lever, said linkage comprising at least one lever link pivotally connected with the pivot boss.

4,271,720

ADJUSTABLE-STROKE CRANK APPARATUS

Charles W. Jacob, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 83,056
Int. Cl.³ F16C *3/04*
U.S. Cl. 74—600 **6 Claims**



1. In a motion conversion apparatus, said apparatus including a flywheel, a crank rod, and means connecting said crank rod to the flywheel, said connecting means being adjustable so that the stroke length of the crank rod may be varied,

the improvement in said adjustable connecting means which comprises:

a first plate secured to said flywheel and having a broad face thereof adjacent a broad face of said flywheel,

a second plate having a broad face thereof adjacent the face of the first plate opposite said flywheel and means attached thereto on the broad face opposite said first plate for connecting said crank rod thereto,

a spline member mounted in fixed position on one of said

plates and having a plurality of keys protruding therefrom,

said spline member having an axis displaced from the axis of the flywheel,

the other of said plates having a grooved portion mateably engageable with said spline member at any of a plurality of rotative positions of said second plate with respect to the first about a transverse axis thereof, and

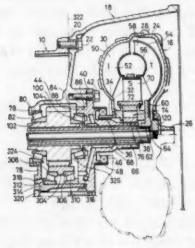
means detachably connecting said plates together at any said positions so that the stroke length of said crank rod may be made positively.

4,271,721

HOUSING FOR FRONT-DRIVE AUTOMATIC TRANSMISSION FOR TRANSVERSE ENGINE OF AUTOMOTIVE VEHICLE

Takahiro Yamamori, Tokyo; Kazuyoshi Iwanaga, and Kunio Ohtsuka, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 29, 1978, Ser. No. 947,128
Int. Cl.[3] F16H *37/08, 57/02*
U.S. Cl. 74—695 **5 Claims**



1. Means for housing

(a) a hydrokinetic unit,

(b) a planetary gear system that includes planetary gear elements, a power input element of the planetary gear system being drivably connected to the hydrokinetic unit, a power output element of said planetary gear system having an output gear, the output gear being disposed between the planetary gear elements and the hydrokinetic unit and having an inboard face facing the planetary gear elements and an outboard face facing the hydrokinetic unit, the power output element being rotatably supported by inboard and outboard bearings located respectively on the inboard and outboard sides of the output gear, clutch means for connecting together two elements of the planetary gear system for rotation in unison, brake means for anchoring one element of the planetary gear system, fluid pressure operated servos for actuating the clutch means and the brake means, and a fluid pressure pump drivably connected to the hydrokinetic unit,

(c) a control valve assembly in communication with the fluid pressure pump for supplying selectively fluid pressure to said servos, and

(d) a fluid drive unit including a differential connected to the output gear of the power output element of the planetary gear system,

said housing means comprising:

a first housing receiving therein said hydrokinetic unit; and

a second housing having a longitudinal wall and an end wall and receiving therein said planetary gear elements,

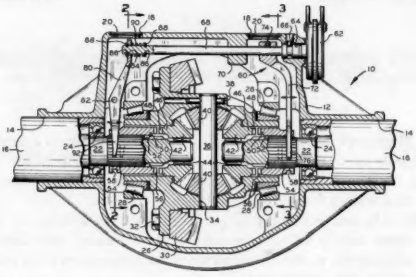
said first and second housings being connected to each other to define an interface which lies in a plane disposed outboard of said inboard face of said output gear, said first housing having a protruding portion extending across said interface into said second housing to contain said output gear and to provide the sole radial and axial support for said inboard bearing.

4,271,722

AXLE DISCONNECT

Chris A. Campbell, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 1, 1979, Ser. No. 62,688
Int. Cl.[3] F16H *1/44, 1/40*
U.S. Cl. 74—710.5 **9 Claims**



1. A differential for a motor vehicle comprising, in combination,

a housing,

a spider positioned within said housing for rotation about an axis,

a ring gear secured to said spider and disposed concentrically about said axis,

a stub shaft disposed perpendicularly to said axis and secured within said spider,

a pair of spaced apart pinion gears disposed on said stub shaft,

a pair of spaced apart side gears disposed about said axis in interengaging relationship with each of said pair of pinion gears, said side gears each including outwardly directed face coupling gear teeth,

a pair of axle shafts disposed along said axis having spaced apart termini generally disposed within said sider, said axle shafts defining a spline adjacent said termini,

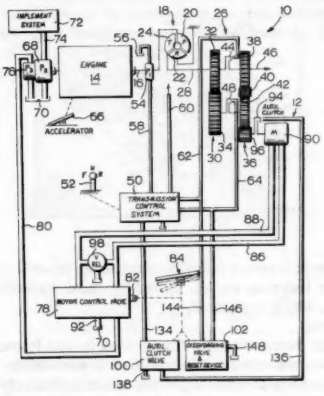
a clutch collar disposed about each of said axle shafts having a complementary spline in engagement with said spline of said axle shafts, said clutch collars each including inwardly directed face coupling gear teeth, and

a control member, an actuator means for moving said control member between a first position and a second position, a control arm rigidly secured at one end to said control member and having means disposed at its opposite end for engaging and axially translating one of said clutch collars, a lever arm pivotally secured within said housing having means disposed at one end for engaging and axially translating the other of said clutch collars, and means for connecting the other end of said lever arm to said control member whereby said coupling teeth of said clutch collars and said coupling teeth of said side gears are engaged in power transmitting relationship in said first position and said coupling teeth of said clutch collars and said coupling teeth of said side gears are disposed in rotationally independent relationship in said second position.

4,271,723
POWER TRAIN WITH AN AUXILIARY CREEPER DRIVE SYSTEM

Walter M. Shaffer, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 743,382, Nov. 19, 1976, Pat. No. 4,132,132.
This application Oct. 10, 1978, Ser. No. 949,590
Int. Cl.[3] F16H *47/02*
U.S. Cl. 74—720 14 Claims



1. An engine driven power train with an auxiliary creeper drive system comprising:

an engine;

a transmission including an input shaft connected to said engine and a first gear set coupled thereto, an output shaft and a second gear set coupled thereto, and clutch means connected to said first and second gear sets for selectively driving said output shaft through a predetermined range of forward and reverse speeds when said engine is driving said input shaft;

auxiliary motor means selectively coupled to one of said gear sets and selectively driven by said engine for driving said output shaft at a creeping speed slower than said predetermined range of speeds at the same engine speed; and

control means for disengaging at least a portion of said clutch means, disconnecting said engine from driving engagement with said one of said gear sets, and connecting said auxiliary motor means drivingly to said one of said gear sets.

4,271,724
SYNCHRONIZED TRANSMISSION WITH TORQUE CONVERTER BY-PASS

Timothy J. Morscheck, Lathrup Village, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 973,262
Int. Cl.[3] F16H *47/00*
U.S. Cl. 74—720 7 Claims

1. A transmission comprising:

a fluid coupling adapted to be driven by an engine;

first and second input means, said first means driven by said coupling, and said second means adapted to be driven directly by said engine;

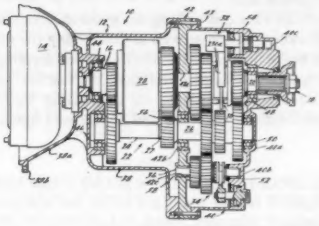
a countershaft driven by said first means;

an output shaft;

low and intermediate speed ratio gears mounted for rotation about one of said shafts and operative when coupled to said one shaft to provide low and intermediate speed ratio changes between said first input means and said output shaft via said countershaft;

clutch means operative when engaged to couple said low speed ratio gear to said one shaft;

first and second jaw clutch members operative when engaged to couple said intermediate gear to said one shaft, said members normally rotating at different speeds during transmission upshifting and downshifting into said intermediate gear;

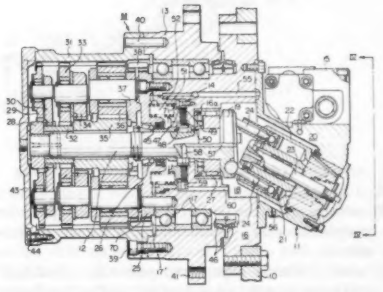


a friction clutch operative when engaged to frictionally connect said second input means directly to said output shaft, said friction clutch momentarily engageable during upshifting into said intermediate speed ratio to synchronize said jaw clutch members for engagement.

4,271,725
HYDRAULIC MOTOR UNIT

Syosuke Takao, Tokyo; Gunpei Kikuchi, Kawasaki; Masuo Sekiguchi, Kawasaki, and Shinji Kawauchi, Kawasaki, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Sep. 26, 1978, Ser. No. 946,023
Claims priority, application Japan, Sep. 28, 1977, 52-116439
Int. Cl.[3] F16H *47/00*
U.S. Cl. 74—730 12 Claims



1. A hydraulic motor unit comprising:

a bent axis type piston motor section adapted to generate torque when hydraulic pressure is applied and including

a bent axis portion encasing a cylinder block rotatable around the axis thereof and pistons axially movable within said cylinder block;

a barrel housing adjacent said bent axis portion and having a mounting base and a cylindrical portion;

a driving shaft rotatably supported by two bearings within said barrel housing and adapted to be rotated by said bent axis portion, the axis of said shaft forming an angle relative to the axis of said cylinder block of said bent axis portion;

a barrel rotatably supported on the cylindrical portion of said barrel housing:

a planetary gear mechanism, disposed between said driving shaft and said barrel, a ring gear arranged to be rotatably coupled to said barrel to transmit the torque from said shaft to said barrel at a reduced speed;

a brake assembly disposed around said shaft between said two bearings, and having a first part stationary relative to said housing, a second part rotatable with said shaft and a brake piston movable in a direction of the axis of said shaft, said first and second parts being arranged to engage and disengage with and from each other to regulate the rotation of said shaft depending on the movement of said brake piston; and

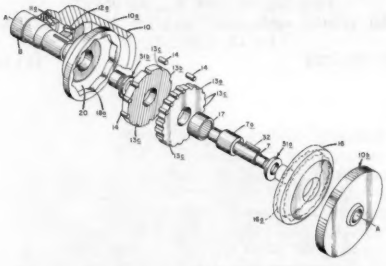
a control valve for controlling the generation of said torque in said motor section as well as controlling the movement of said brake piston, said bent axis portion forming a space by virtue of the angular relationship relative said shaft, said valve being mounted on said barrel housing at a position adjacent said base and within said space.

4,271,726

PLANETARY TRANSMISSION

Henry Ryffel, Hillsboro, N.H., assignor to Compudrive Corporation, North Billerica, Mass.

Filed Dec. 29, 1978, Ser. No. 974,310
Int. Cl.[3] F16H *1/28*
U.S. Cl. 74—805 **12 Claims**



1. An improved planetary transmission comprising

A. a housing,

B. orbiting means including a first circular plate having a peripheral array of similar sockets shaped as arcs of circles,

C. a set of similar uncaptured generally cylindrical rollers rotatively seated in said sockets, said rollers having their curved surfaces projecting beyond the periphery of said plate,

D. a first annular nonorbiting gear, said first gear having an inner surface formed with a hypo-cycloidal curvature with a number of lobes exceeding by at least one the number of sockets in said plate, said first gear encircling said plate so that its said inner surface is in rolling contact with said rollers and said rollers are free to rotate within their sockets,

E. a second annular nonorbiting gear, said second gear having surfaces in cooperating encircling engagement with said orbiting means,

F. a first shaft keyed to one of said nonorbiting gears, said first shaft being rotatively secured in and projecting from said housing, and

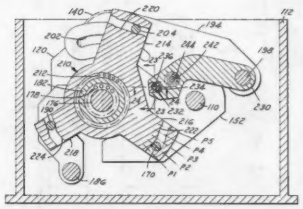
G. means including a second shaft rotatively secured in and projecting from said housing for eccentrically driving said orbiting means within said housing.

4,271,727

APPARATUS FOR CYCLOIDAL ACCELERATION AND DECELERATION WITH PARTIAL CONSTANT VELOCITY

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Jun. 11, 1979, Ser. No. 47,042
Int. Cl.[3] B23B *17/00*
U.S. Cl. 74—813 R **25 Claims**



1. A reversible rotary indexing mechanism capable of generating large indexing angles, including those exceeding one revolution, which comprises:

(a) a frame,

(b) output means mounted for rotation in said frame,

(c) input means mounted for rotation in said frame,

(d) accelerating-decelerating drive means operatively associated with said input means and selectively engageable with said output means and, when engaged with said output means and driven by a constant predetermined velocity of said input means, drives said output means at a cyclically varying velocity accelerating from a substantially zero velocity to a predetermined maximum velocity and then decelerating to a substantially zero velocity in a repetitive cycle,

(e) constant velocity drive means operatively associated with said input means and selectively engageable with said output means, and, when engaged with said output means and driven by said constant predetermined velocity of said input means, drives said output means at a constant velocity substantially equal to said predetermined maximum velocity, and

(f) shifting means operatively associated with said accelerating-decelerating means and with said constant velocity means, and adapted to disengage said accelerating-decelerating means from said output means at its said predetermined maximum velocity and substantially simultaneously to engage said constant velocity means with said output means, and further adapted to subsequently disengage said constant velocity means from said output means and substantially simultaneously to re-engage said accelerating-decelerating means with said output means at a position in the cycle of said accelerating-decelerating means when it drives said output means at said predetermined maximum velocity.

4,271,728

AUTOMATIC TRANSMISSION SYSTEM

Hisato Wakamatsu, Toyota, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 21, 1978, Ser. No. 889,658
Claims priority, application Japan, Apr. 11, 1977, 52-41237
Int. Cl.[3] B60K *41/08, 20/00*
U.S. Cl. 74—866 **2 Claims**

1. In an electronic automatic transmission system for automobiles having

control means for controlling the transmission ratio between an engine and wheels of an automobile in response to a fluid applied thereto,

a fluid source,

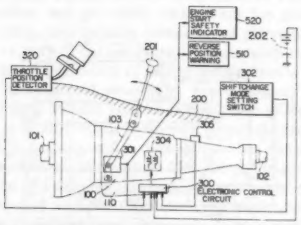
first valve means manually and remotely shifted by a shift lever located on the upper side of a floor of said automobile for changing the application mode of said fluid applied from said fluid source to said control means,

second valve means electromagnetically shifted for changing the application mode of said fluid applied from said first valve means to said control means,

a transmission body located under the floor of said automobile for encasing said control means, said fluid source, said first valve means and said second valve means therein, and

an electronic circuit for controlling the shift position of said second valve means in response to at least the shift position of said first valve means,

the improvement comprising:



a shift position detector being positioned within said transmission body for directly detecting the shift position of said first valve means and having a movable member and plurality of signal generating members,

said movable member being coupled to said first valve means to be moved in association therewith, and

said signal generating members being fixedly supported within said transmission body and effective to detect the position of said movable member indicative of the shift position of said first valve means,

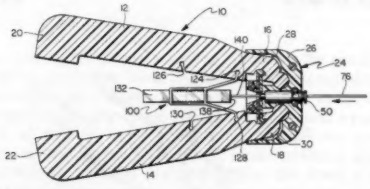
whereby the detected shift position is not affected by the relative position of the floor of said automobile and said transmission body.

4,271,729

WIRE STRIPPING DEVICE

Joseph A. Perrino, Rehoboth, Mass., and Thomas W. Perrino, Johnston, R.I., assignors to Micro Electronics, Inc., Newport, R.I.

Filed Feb. 16, 1979, Ser. No. 12,663
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.5 B **16 Claims**



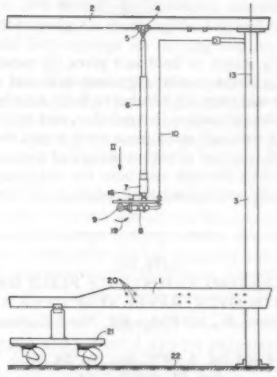
1. A device for stripping insulation from relatively small diameter electrical wire, comprising a pair of hand-held elongated grip members, a block for pivotally mounting said grip members at one end thereof, the other ends of said grip members being movable relative to each other to and from a closed stripping position, an elongated axially extending tubular guide located in said block intermediate said grip members and receiving therein in guiding relation the lead-in portion of a wire from which insulation is to be stripped, a pair of blade members located in opposed relation in said block and including exposed blade elements for severing the insulation of said wire during a wire stripping operation, said blade members being disposed in perpendicular relation to the longitudinal axis of said guide and being movable by said grip members for lateral movement relative to the longitudinal axis of said guide upon pivotal movement of said grip members to the closed stripping position, wherein said blade elements penetrate into the wire insulation, and whereafter a longitudinal retracting movement of said wire strips the insulation from the lead-in portion thereof, said block including a base, a cover plate removably mounted on said base for enclosing the pivotal ends of said grip members in said block, said cover plate having an elongated, transversely extending opening formed therein that overlies said blade members, whereby said blade members are removable from said block through said opening for replacement thereof.

4,271,730

WRENCHING DEVICE FOR INSTALLING AND TIGHTENING SCREWS TO A HIGH TORQUE

Alfred Höll, Niederroth, and Anton Wewerka, Dachau, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,773
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830906
Int. Cl.³ B25B *29/00*
U.S. Cl. 81—57.4 **11 Claims**



1. In a wrenching or torquing device for installing and tightening screws to a high torque; a power wrench; an extensible telescope strut, said wrench being attached to the lower end of said telescope strut; an overhead rail; a roller tram adapted to travel along said rail, said strut being suspended from said tram, the improvement comprising: said telescope strut being a tubular member, said power wrench being a torque-type angular power wrench, said power wrench being attached to the telescope strut in an adjacent mounting and having a shank extending approximately at a right angle to the telescope strut and being supported on the telescope strut at at least one point lying remote from the screwing axis such that the reaction torque of the wrench is transmitted to the telescope strut as an axial or transverse force.

4,271,731

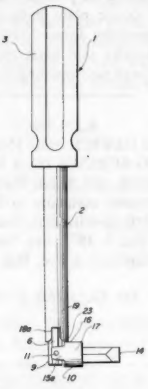
PIVOT TIP HAND TOOL

Diane Suligoy, R.R. 5, Mound Rd., Joliet, Ill. 60436, and Sharon Cook, 9704 Stacy, Union, Ill. 60180

Filed Sep. 7, 1979, Ser. No. 73,159
Int. Cl.³ B25G *1/00*; B25B *13/00*
U.S. Cl. 81—177 ST **2 Claims**

1. A pivot tip hand tool, comprising a hand grasp member, an elongated member aligned with said hand grasp member, a

work piece shaft mounted in relation to said elongated member for relative movement therewith between a retracted position and an extended position, a pivot tip member between a first working position and a second working position, said pivot tip member being in axial alignment with said work piece shaft in said first working position, the axis of said pivot tip member being substantially normal to the longitudinal axis of said work piece shaft in said second working position, first holding means to hold said work piece shaft in said extended position, and



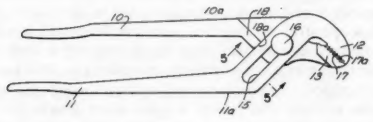
second holding means to hold said pivot tip member in said first working position in axial alignment with said work piece shaft, wherein said pivot tip member includes a socket member, an axial bore through said socket member, said axial bore being axially aligned with said work piece shaft in said first working position, a tool received in said axial bore of said socket member and extending through said bore for end-to-end abutting contact with said work piece shaft when in said first working position.

4,271,732

CAM-OPERATING ADJUSTABLE PLIER WRENCH WITH OVERTRAVEL STOP DEVICE

James E. Vaughan, Jr., 248 Fisher Rd., North Dartmouth, Mass. 02747

Filed Jul. 2, 1979, Ser. No. 54,284
Int. Cl.³ B25B 7/04
U.S. Cl. 81—414 **1 Claim**



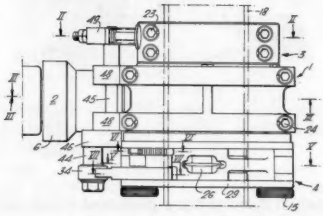
1. An adjustable jaw plier wrench comprising:
a first handle means,
a first jaw means connected to said first handle means,
a second handle means,
a second jaw means connected to said second handle means,
a pivot pin means carried by said first jaw means,
an adjustable arcuate tooth and socket means incorporated within the jaw means, spaced from and concentric with the pivot pin means, said second jaw means having a substantially rectangular portion extending at right angles to the jaw, said portion joining said jaw and handle means, said portion having a slot receiving said pivot pin for adjusting said tooth and socket means,
an overtravel stop member integrally mounted onto said first handle means on the portion thereof remote from the jaw and pivot pin to limit overtravel of said tooth in said socket of said second handle means during pivotal movement of said handles and jaws about said pivot pin, said stop member engaging the edge of said rectangular portion from the closed jaw position to fully open jaw position as said jaws are adjusted.

4,271,733

ROTARY TOOLS

Ronald L. Stone, Dorchester, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 23, 1979, Ser. No. 68,881
Claims priority, application United Kingdom, Sep. 8, 1978, 36114/78
Int. Cl.³ B23B 3/22
U.S. Cl. 82—4 C **10 Claims**



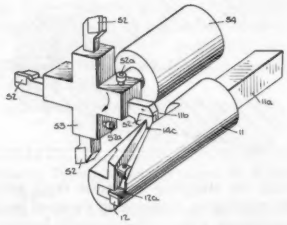
1. A rotary tool for metal working comprising a drive unit attachable to the metal to be worked, a drive detachably engageable in the drive unit and a rotary metal working unit driven by the drive unit, the drive unit including means for controlling the extent of working by the metal working unit, said means comprising means for detecting loading on the working unit and controlling working to restrict said loading to within a preselected limit.

4,271,734

APPARATUS FOR GUIDING CONTINUOUS CHIP FORMED IN LATHING

Keiichi Kimura, Yokohama, and Eimei Negishi, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Division of Ser. No. 872,156, Jan. 25, 1978, Pat. No. 4,220,427.
This application Jun. 8, 1979, Ser. No. 46,835
Claims priority, application Japan, Jan. 31, 1977, 52-9439; Sep. 5, 1977, 52-105883; Sep. 12, 1977, 52-108964; Sep. 16, 1977, 52-110466; Sep. 20, 1977, 52-112201; Sep. 21, 1977, 52-112553
Int. Cl.³ B23B 25/02, 27/22
U.S. Cl. 82—34 R **8 Claims**



1. Apparatus for guiding a continuous chip formed by the cutting tool of a lathe to a determined position, said cutting tool being provided with a rake face, said apparatus comprising: a tool holder, a guide member adapted to be supported on said tool holder and provided with means for guiding said continuous chip, said guiding means being provided with an inlet in the vicinity of the cutting edge of said cutting tool and

with an outlet, the direction of said guiding means in the vicinity of the inlet thereof coinciding approximately with the direction of flow of said continuous chip, said guiding means comprising a groove open upwardly perpendicularly to the rake face of the cutting tool, a resilient member disposed along said groove to cover the bottom face thereof in a manner to allow passage of a chip between said resilient member and said bottom face, said resilient member being biased toward said bottom face to prevent said chip from curling vertically upwardly, and chip disposing means disposed behind said outlet, said disposing means comprising cutting means for cutting the continuous chip ejected from said outlet.

3. Apparatus for guiding a continuous chip formed by the cutting tool of a lathe to a determined position, said cutting tool being provided with a rake face, said apparatus comprising: a tool holder, a guide member adapted to be supported on said tool holder and provided with means for guiding said continuous chip, said guiding means being provided with an inlet in the vicinity of the cutting edge of said cutting tool and with an outlet, the direction of said guiding means in the vicinity of the inlet thereof coinciding approximately with the direction of flow of said contiuous chip, said guiding means comprising a groove open upwardly perpendicularly to the rake face of the cutting tool, a resilient member disposed along said groove to cover the bottom face thereof in a manner to allow passage of a chip between said resilient member and said bottom face, said resilient member being biased toward said bottom face to prevent said chip from curling vertically upwardly, and chip disposing means disposed behind said outlet, said disposing means comprising take-up means for winding said chip.

4,271,735

TOOL HOLDERS

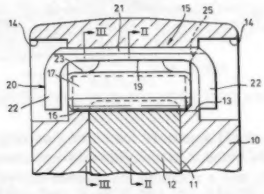
Dennis Denman, Retford, England, assignor to Matthias Spencer & Sons Limited, Sheffield, England

Filed Sep. 21, 1979, Ser. No. 77,596

Claims priority, application United Kingdom, Sep. 21, 1978, 37581/78

Int. Cl.[3] **B23B** *29/00;* **B26D** *1/00;* **B23B** *31/10*

U.S. Cl. 82—36 R **10 Claims**



1. A tool holder having a socket to receive the shank of a tool and a transverse bore crossing and breaking into the socket, and a tool retaining device for insertion in the transverse bore comprising a rigid retaining member and a resilient member of elastomeric material urging the retaining member sideways so that, in use, at least part of the retaining member projects into the socket to engage and locate the shank of a tool inserted therein, the retaining device also comprising, at opposite ends thereof, stop members mounted on the elastomeric material and having portions which are disposed beyond the ends of the transverse bore when the retaining device is located therein, which members are movable transversely to a longitudinal axis of the retaining device between a release position where said portions lie within the cross-section of the transverse bore, so that the retaining device may pass through the bore, and a locking position where they project outside the cross-section of the transverse bore so as to overlie surfaces of the tool holder surrounding the ends of the bore, thereby preventing longitudinal movement of the retaining device in the transverse bore.

4,271,736

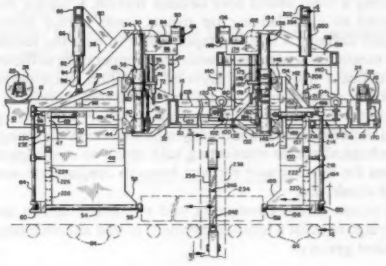
SAWMILL APPARATUS WITH VERTICALLY MOVABLE LOGGING DOGS

Aaron U. Jones, 1880 McLean Blvd., Eugene, Oreg. 97405

Filed Feb. 21, 1980, Ser. No. 123,170

Int. Cl.[3] **B27B** *15/04, 29/08*

U.S. Cl. 83—156 **4 Claims**



1. In a sawmill apparatus,

a bandsaw,

a first movable carriage supporting a first log engaging member,

a second movable carriage supporting a second log engaging member, said second carriage being movable relative to said first carriage for engaging the log, and being movable with said first carriage for driving said log toward said bandsaw,

conveyor means disposed below the path of said log engaging members and adjacent said bandsaw for receiving boards and cants cut from said log by said bandsaw,

means for adjusting the vertical position of said log above said conveyor means by vertically moving said log engaging members,

and side braces mounted on each said carriage and extending downwardly on each side of said log engaging members, each brace carrying a bearing member disposed in slidable relation to a side of a said log engaging member for maintaining alignment during movement thereof.

4,271,737

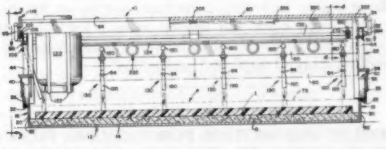
MOVABLE INSULATION PUNCHER

Thomas W. Steenson, Richmond Hill, and W. Donald Paton, Aurora, both of Canada, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Aug. 29, 1979, Ser. No. 70,784

Int. Cl.[3] **B26F** *3/08*

U.S. Cl. 83—171 **8 Claims**



1. A movable insulation puncher comprising:

a multi-layer panel having a layer of insulation;

a track-defining bracket surrounding said panel and including a web supporting said panel and a pair of side flanges attached to said web to be located closely adjacent the side edges of said panel, said side flanges forming tracks;

a carriage which includes wheels adapted to move along said tracks, a base beam mounted on said wheels, a bridge extending across said multi-layer panel, and a fuel tank mounted on said carriage;

insulation lacing means on said carriage, said lancing means including guide means on said carriage, a support beam

movably mounted on said guide means, a mounting plate mounted on said support beam to be movable therewith, a plurality of hollow insulation lancing tip means mounted on said plate, said lancing tip means each having an elongate flattened body portion which includes a pair of planar walls, said planar walls including lower edges, said lancing means further including a lancing tip which includes said planar wall lower edges, said lancing means each having a blind ended bore defined therein, a burner connected to each lancing tip means, each burner having means defining a needle-shaped flame to heat the lancing tip means associated therewith to a temperature sufficient to define a hole in said layer of insulation, each burner being connected to said tank to receive fuel therefrom;

lancing tip means moving means mounted on said carriage and including a crank movably mounted on said carriage, mechanical means connecting said crank to said support beam for moving said support beam in conjunction with said crank; and

beam return means connecting said movable beam to said carriage to assist a return movement of said movable beam against gravity.

4,271,738

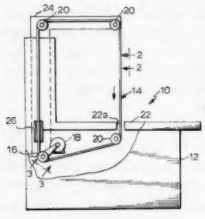
SAWING MACHINE

Eugene R. DeAngelis, Rte. 2, Box 795, Havana, Fla. 32333

Filed Apr. 23, 1979, Ser. No. 32,159

Int. Cl.[3] B23D *53/02*; B27B *13/00*

U.S. Cl. 83—174 **4 Claims**



1. A machine for cutting hard materials, comprising:

a supporting base;

at least two pulleys connected to said supporting base; means connected to one of said pulleys for driving said pulley; and

an endless array of cutting teeth joined end-to-end along a central axis to form an endless band, each of said teeth being shaped in a truncated cone, said endless array of teeth being coupled about said pulleys;

said drive pulley connected to said means for turning said drive pulley including a recessed perimeter having recessed areas sized and shaped as said conical teeth to receive said conical teeth to prevent slippage between said endless array of teeth and said pulley.

4,271,739

MACHINE AND METHOD FOR FORMING, FILLING, AND SEALING PACKAGES OF LAMINATED SHEET MATERIAL

Yun H. Chung, Rossford, Ohio, assignor to International Automated Machinery, Inc., Perrysburg, Ohio

Filed Jun. 11, 1979, Ser. No. 47,203

Int. Cl.[3] B26D *7/14, 5/20, 2/06*

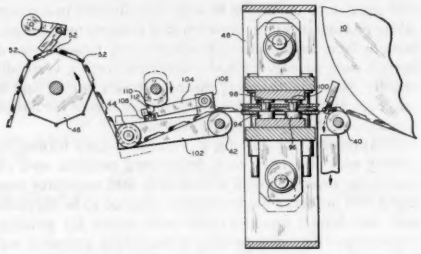
U.S. Cl. 83—175 **8 Claims**

1. Apparatus for forming packages of product between facing surfaces of two webs of packaging material including:

means for directing a laminated web of packaging material containing spaced apart sealed cavities containing the packaged product along a path;

means for sequentially forming registering apertures in said laminated web along the length thereof in spaced relation from the cavities containing the packaged product; and

means for stretching (said laminated web) a portion of the



length of said web including at least one of said cavities at least just prior to and just after the forming of the registering apertures, to maintain a constant length of that portion of said web in which the registering apertures are formed.

4,271,740

CUTTING APPARATUS FOR POTTING MATERIAL WITH HOLLOW FIBERS EMBEDDED THEREIN

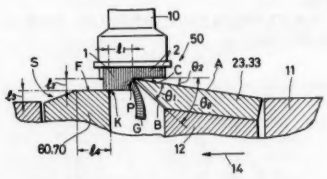
Masahiro Yamazaki, Yokohama; Takayasu Akiyama, Numazu; Yoshihiro Makuta, Fujisawa, and Tosikuni Maruoka, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,133

Claims priority, application Japan, Apr. 26, 1978, 53/49608

Int. Cl.[3] B26D *4/72*

U.S. Cl. 83—592 **16 Claims**



1. An improved apparatus for cutting potting material with hollow fibers embedded therein, said apparatus including a cutting blade and a rotatable chassis for carrying said blade, said material being cut in such a manner that said cutting blade is rotated relative to said material, said cutting blade comprising a straight blade having a straight cutting edge, said improvement comprising:

(a) said cutting edge defined by a first blade surface to be positioned at an angle with a predetermined cutting plane of said material and a second blade surface to be positioned at a larger angle with said cutting plane of said material than that of said first blade surface; and

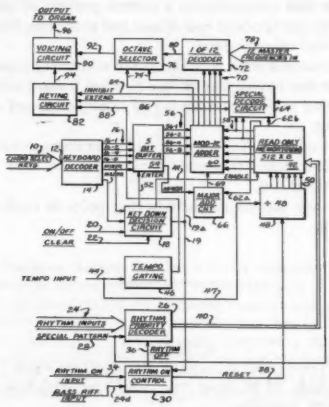
(b) means carried by said rotatable chassis for supporting said material as the latter is being cut by said blade, said supporting means mounted to and extending outwardly from said chassis so that said material does not contact the chassis,

wherein on the relative rotation of said straight blade said first blade surface is so disposed as to be withdrawn from said cutting plane of said material toward said second blade surface without substantially contacting with said cutting plane, thereby achieving an extremely smooth planar cut of the potting material and hollow fibers.

4,271,741
ACCOMPANIMENT SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

William R. Hoskinson, Geneva, Ill.; Peter E. Solender, Williamsville, N.Y., and William V. Machanian, DeKalb, Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Mar. 15, 1978, Ser. No. 886,750
Int. Cl.[3] G10F *1/00*
U.S. Cl. 84—1.03 22 Claims

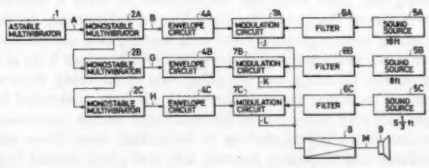


1. In an electronic musical instrument having a plurality of switch means each manually operable for selecting one of a plurality of predetermined cords, an arpeggio system selectively operable for producing arpeggio effects, comprising:
first electronic circuit means for producing a predetermined chord position signal in response to operation of each of said switch means, ROM means containing predetermined arithmetically and time related patterns of note position signals,
second electronic circuit means for arithmetically adding the chord position signal of the selected chord with each of selected ones of said note position signals to generate arpeggio signals, and
third electronic circuit means responsive to said arpeggio signals for directing said musical instrument to sound an arpeggio effect in the musical key of the selected chord.

4,271,742
SOUND GENERATOR FOR PRODUCING ANGKLONG LIKE SOUND

Masao Sakashita, and Yoshiaki Matsuura, both of Saitama, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Nov. 9, 1979, Ser. No. 93,079
Claims priority, application Japan, Aug. 28, 1979, 54/109585
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.26 7 Claims

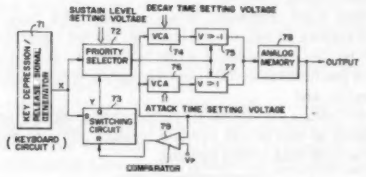


1. A sound generator for producing sounds similar to those of an angklong, comprising:
a circuit for generating a series of consecutive rectangular waves,
envelope circuits each providing an envelope wave having the same period as that of each said rectangular wave, a sharp rising leading edge followed by gradual decay and a given time lag relative to each other that is short when compared to a half period of said rectangular wave,
sound source circuit means incorporated for generating output signals having a waveform substantially equal to an output waveform of the angklong,
modulation circuits for modulating the output signals of the sound source circuit means with the respective envelope waveforms,
means for superposing the outputs of the modulation circuits, and
means for sounding the superposed signal from a loudspeaker as a musical sound.

4,271,743
ENVELOPE SIGNAL GENERATOR

Shigeru Uchiyama, Ageo, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Nov. 15, 1979, Ser. No. 94,633
Claims priority, application Japan, Nov. 17, 1978, 53-142044
Int. Cl.[3] G10H *1/057, 1/22*
U.S. Cl. 84—1.26 1 Claim

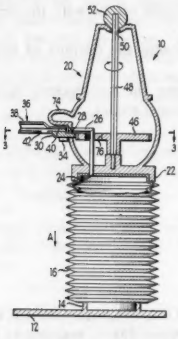


1. An envelope signal generator comprising:
a key depression/release signal generator for producing different output levels in response to key depression and key release;
an analog memory;
a switching circuit which is set to a first output level upon key depression and set to a second output level when the stored output level of said analog memory has reached a certain value;
a preset circuit for outputting at least a level setting voltage and first and second time constant setting voltages relating to an envelope;
a priority selector which is supplied with the key depression/release signal generator output, the switching circuit output and the level setting voltage and selects one of them in a predetermined order of priority;
first and second voltage controlled amplifiers;
a first circuit for converting into a current the output from said first voltage controlled amplifier supplied with the output from said analog memory and controlled by the first time constant setting voltage;
a second circuit for converting into a current the output from said second voltage controlled amplifier supplied with the output from said analog memory and controlled by the second time constant setting voltage; and wherein
said analog memory is connected in common to the outputs of the first and second circuits;
wherein the operative states of the first and second circuits are controlled in accordance with the output from the priority selector.

4,271,744
MUSICAL TOY

Ralph J. Kulesza, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 82,651
Int. Cl.[3] G10D 7/02
U.S. Cl. 84—330 7 Claims

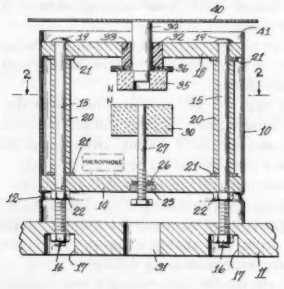


1. A musical toy comprising:
a housing in the shape of a figure including a head with a mouth opening;
a fluid pump in said housing for pressurizing a fluid;
means for conveying said pressurized fluid from said pump to said mouth opening;
a musical wind instrument slidably mounted for reciprocation relative to said mouth opening, having a plurality of side by side tone producing mechanisms of different pitch each positionable in fluid communication with said mouth opening; and
a control means for selectively reciprocating said instrument relative to said mouth opening to align different mechanisms with said mouth opening.

4,271,745
PERCUSSION INSTRUMENTS

Homer M. Shatto, 680 Rte. 322 E., East Orwell, Ohio 44034

Filed Aug. 15, 1978, Ser. No. 933,865
Int. Cl.[3] G10D 13/02
U.S. Cl. 84—402 17 Claims

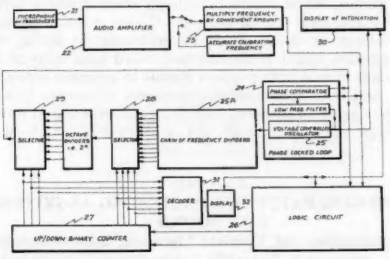


1. A percussion instrument, comprising:
a tubular shell formed of rigid, thin-wall material, having a rim defining an open end thereof,
a thin metal diaphragm disposed transversely of said open end having a peripheral portion overlying said rim, said diaphragm being adapted for striking by a drumstick or the like,
inner and outer discs held within and transversely of said shell in spaced-apart relation axially of the latter,
said outer disc having one surface directed toward said shell open end and its other surface directed toward the interior of said shell, and said outer disc having an axially arranged central opening,
means supporting said diaphragm from said shell, comprising a first rod slidable axially through said central opening and having one end extending from said outer disc one surface and connected to a central portion of said diaphragm, the opposite end of said rod extending from said outer disc other surface,
a first permanent magnet connected to said rod opposite end,
said inner disc having one surface directed toward said outer disc other surface, and having an axially-arranged central opening,
a second rod extending through said inner disc central opening, and a second permanent magnet secured to an end of said second rod,
said first and second magnets having poles in confronting relation.

4,271,746
AUTOMATIC MUSICAL TUNING DEVICE

John G. Dobbie, 15 Pleasant Ave., East Lindfield, New South Wales 2070, Australia

Continuation of Ser. No. 923,869, Jul. 12, 1978, abandoned. This application Feb. 1, 1980, Ser. No. 117,602
Claims priority, application Australia, Jul. 12, 1977, PD0804; Apr. 12, 1978, PD3987
Int. Cl.[3] G10G 7/02
U.S. Cl. 84—454 6 Claims

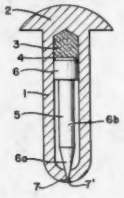


1. An automatic musical tuning device adapted to display a representation of an individual note from an incoming tone, said device comprising an input microphone, conversion circuitry connected to said microphone for amplifying and processing the input from the microphone to form a discrete waveform of frequency having a known relationship to the incoming tone, a phase locked loop having two comparator inputs, one said input being connected to the output from said conversion circuitry and the other said input being derived from an oscillator through frequency dividers controlled by logic circuitry arranged to automatically switch successive division ratios corresponding to individual notes from said oscillator and frequency dividers into said phase locked loop until said phase locked loop locks onto the input tone from said conversion circuitry, an output display comprising a visual representation of the tone locked into said phase locked loop, and output circuitry connected between said phase locked loop and said output display for enabling said output display when triggered by said phase locked loop.

4,271,747
FASTENING ELEMENT WITH A CAVITY CONTAINING AN EXPLOSIVE CHARGE

Hellmut Bendler, Furth; Axel Homburg, Taunusstein, and Horst Penner, Furth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,685
Int. Cl.³ B23P *19/00*; F16B *15/00*
U.S. Cl. 411—20 **21 Claims**

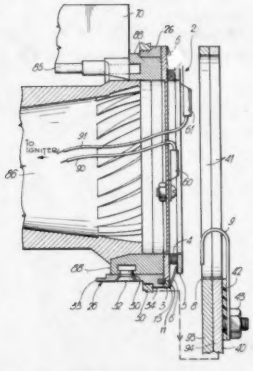


1. A fastening element that has a cavity containing an explosive charge arranged so that due to the explosion of the explosive charge anchoring of the fastening element within a bore of a workpiece takes place automatically and that functions as a rivet-nail combination, said element comprising sleeve means defining the cavity containing the explosive charge at one end and providing an aperture at the other end, and a nail disposed within said sleeve means, said nail comprising a head, a shank, and a tip and being arranged to be driven out through the aperture formed in said other end; the head of the nail acting as a piston which can be driven by explosion of the explosive charge and as a stop which arrests the driving-out movement when the shank of the nail has passed through said aperture.

4,271,748
SHORTING AND RADIATION PROTECTION DEVICE FOR ROCKET

Frederick D. Ward, St. Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 20, 1979, Ser. No. 22,107
Claims priority, application Canada, Jul. 6, 1978, 306896
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.814 **4 Claims**



1. A rocket igniter safety device for use in conjunction with a rocket retention and ignition assembly for a rocket launcher, and for a rocket including an igniter and a retention member outwardly extending from and circumscribing the rocket body adjacent the rear end of said rocket, said retention member disconnecting from the remainder of said rocket when said rocket is fired, said assembly comprising first support means for engaging said retention member when said rocket is placed in a firing position in said rocket launcher and preventing forward displacement of said retention member from the firing position, said first support means having a loading hole formed therein to permit loading of said rocket therethrough into said rocket launcher, said hole being too small to permit passage of said retention member therethrough, second support means adapted to be detachably fixed to said first support means and adapted for engaging said retention member when said rocket is in said firing position and preventing rearward displacement of said retention member from the firing position, said second support means being removable from said first support means to permit removal of a spent retention member and loading of a rocket, said second support means having an opening formed therein, said opening being located at said rear end when said second support means engages said retention member, and a first electrical contact means attached to said second support means, said electrical contact means being electrically connected to an electrical firing means, said safety device comprising

(a) a second electrical contact means electrically connected to said igniter by means of an insulated electrical conductor to define a first part of an electrical circuit,

(b) shielding means for shielding said electrical circuit from electromagnetic radiation, said shield means being electrically connected to said igniter by means of an insulated electrical conductor, and to ground, to define a second part of said electrical circuit,

(c) insulating means between said second electrical contact means and said shielding means for electrically insulating said electrical contact means from said shielding means,

(d) electrical switch means between said shielding means and said second electrical contact means for shorting said electrical circuit by grounding said igniter when said switch means is closed, and

(e) actuating means for simultaneously opening said switch means and effecting electrical contact between said first and second electrical contact means to complete the electrical circuit between said igniter and said electrical firing means, when said rocket is placed in the firing position, wherein said safety device is adapted to be fastened to said retention member.

4,271,749
REDUCED BACK PRESSURE, ANTI-CAVITATION VALVE SYSTEM

George E. Pease, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 21, 1978, Ser. No. 971,792
Int. Cl.³ F15B *13/16, 11/10*
U.S. Cl. 91—358 R **5 Claims**

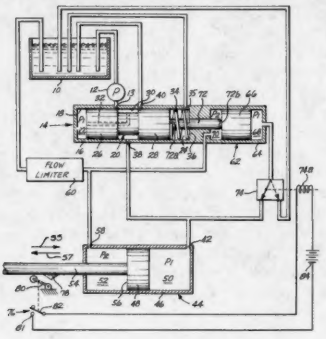
1. An improved valving system for regulating the pressure of the fluid within a hydraulic actuator of the type having a first hydraulic cylinder, a movable piston therein that separates the cylinder into first and second actuator chambers, said improved valving system comprising:

sensing means in fluid communication with said first and second actuator chambers for sensing the difference in fluid pressure of the fluid within said first and second actuator chambers, said sensing means including a second hydraulic cylinder having a sensing piston movably mounted therein that separates said second cylinder into first and second sensing chambers, said first sensing chamber being in fluid communication with said first actuator chamber and said second sensing chamber being in fluid communication with said second actuator chamber;

pressure regulating means in fluid communication with said first actuator chamber for regulating the pressure of the fluid within said first actuator chamber in response to said sensed difference in pressure;

means for transmitting said difference in pressure from said sensing means to said pressure regulating means;

signal producing means operably associated with said actuator for producing a first signal in response to said piston



within said first hydraulic cylinder reaching a predetermined location within said first hydraulic cylinder; and,

valve means responsive to said first signal for interrupting the fluid communication between said first sensing chamber and said first actuator chamber.

4,271,750

SERVO BOOSTERS FOR VEHICLE BRAKING SYSTEMS

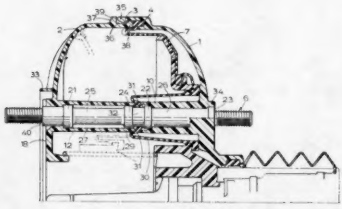
Alfred W. Thomas, Koblenz, and Lutz E. A. op den Camp, Koblenz-Moselweiss, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 6, 1979, Ser. No. 55,352

Claims priority, application United Kingdom, Jul. 8, 1978, 29255/78

Int. Cl.³ F01B *19/00*

U.S. Cl. 92—98 D **3 Claims**



1. A servo booster assembly for a vehicle braking system comprising a housing, an input member, an output member, a movable wall dividing the interior of the housing into two chambers and adapted to apply a force to said output member when the chambers are subjected to a pressure differential in response to a force applied to said input member, a flexible diaphragm and a diaphragm support plate of said movable wall, first and second housing walls of said housing on opposite sides of said movable wall, at least on tie extending through said diaphragm support plate from said first housing wall to said second housing wall, a rolling diaphragm sealing said movable wall to said tie, and a sleeve connected to said first housing wall and encasing at least part of said tie within said housing, a radially outer surface of said sleeve being arranged to support said rolling diaphragm.

4,271,751

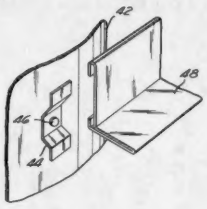
AIR DEVICE WITH FLEXIBLE MOUNTING SYSTEM

David R. Timmons, Newport Beach, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Division of Ser. No. 892,168, Mar. 31, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,841

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—40 D **5 Claims**



1. An air terminal device for connection to the end of an air duct, comprising:

(a) a rigid conduit having an inlet end and an outlet end, said inlet end being adapted for connection to an air duct and said outlet end being adapted for connection to an air discharge device;

(b) first and second support members each comprising a first portion disposed parallel to the longitudinal axis of said rigid conduit and having a pair of opposed slots formed therein for slidable attachment to said rigid conduit at any one of a plurality of positions between said support members, and a second portion disposed at an angle with respect to said first portion to enable connection of said support members to the top surfaces of two spaced building structural members thereby to provide support in space for said rigid conduit at substantially any selected location between two spaced building structural members; and

(c) first and second opposed dovetail brackets disposed on said rigid conduit to enable said slidable attachment of said pairs of slots in said first portions of said first and second support members, respectively, to said rigid conduit and to provide a positive mechanical lock therewith.

4,271,752

COFFEE MAKING ASSEMBLY

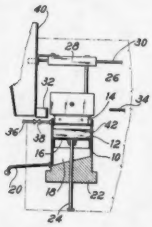
Paolo Valente, and Taddeo Piloni, both of 30, Via Noccoli, Cremeno (Como), Italy

Filed Apr. 9, 1979, Ser. No. 28,090

Claims priority, application Spain, Apr. 12, 1978, 235.333

Int. Cl.³ A47J *3/34*

U.S. Cl. 99—289 R **12 Claims**



1. Apparatus for preparing and delivering a coffee infusion comprising a fixed cylinder including a first end and a second end, said fixed cylinder including an upper rim located at said first end thereof, a first piston mounted for reciprocation within said fixed cylinder between a first position within said

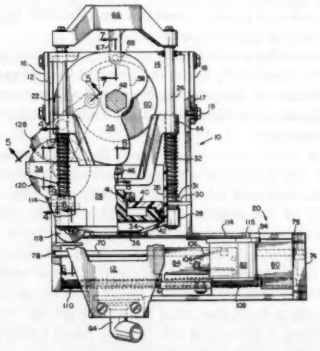
cylinder and displaced from said upper rim at said first end of said cylinder so as to define a predetermined coffee dose volume between the upper face of said first piston and said upper rim of said fixed cylinder, and a second position in alignment with said upper rim of said fixed cylinder, a second piston mounted for reciprocation in the plane of said fixed cylinder between a first position at said upper rim of said fixed cylinder so as to sealingly close said predetermined coffee dose volume and a second position outside of said fixed cylinder so as to permit access to said predetermined coffee dose volume, means for supplying pressurized hot water to said predetermined coffee dose volume when said second piston is in said first position, duct means for collecting and delivering coffee produced in said predetermined coffee dose volume from said second end of said fixed cylinder, reciprocating support means for said second piston whereby said second piston may be reciprocated from said second position in said plane of said cylinder to a third position outside of said plane of said cylinder, conveyor means carried by said support means whereby when said second piston is in said third position said conveyor means is aligned with said cylinder so that a predetermined coffee dose may be conveyed to said fixed cylinder thereby, motor means, including a motor shaft, and mechanical control means for reciprocating said second piston and said reciprocating support means upon rotation of said motor shaft, said mechanical control means comprising a support wall mounted adjacent to said plane of said cylinder, said support wall including support wall guide means, a control plate pivotally mounted on said support wall, pin means connected to said second piston for guiding said piston upon rotation of said motor shaft by cooperation of said pin means with said support wall guide means and said control plate, and connection means for causing said control plate to reciprocate in response to rotation of said motor shaft.

4,271,753

BREWING MECHANISM

Raymond J. Neely, Lansdale, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Nov. 23, 1979, Ser. No. 93,881
Int. Cl.³ A47J *31/00*
U.S. Cl. 99—289 R **13 Claims**



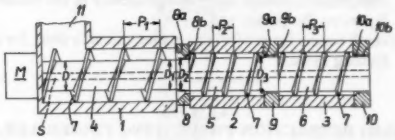
1. A brewing mechanism comprising of frame, a vertically movable open-bottom cylinder supported by said frame, a vertically movable piston inset cylinder and supported by said frame, said piston being within said cylinder at the upper end of its stroke, first spring means biasing said piston upwardly and biasing said cylinder downwardly, means to facilitate entry of water into the cylinder below the elevation of said piston when the piston is at the upper end of its stroke, a base assembly reciprocable horizontally between a brewing position and a discharge position, said base assembly including a brewing cavity which is positionable beneath and sealed with the cylinder in the brewing position of the assembly, the second spring means biasing said assembly towards the discharge position, a camshaft driven by a motor, plurality of cams on said camshaft, a first cam follower on said piston, a second cam follower on said cylinder, each cam follower being in contact with a discreet one of said cams on said camshaft, said first spring means cooperating with one of said cams to aid said motor in moving said base assembly toward said brewing position.

4,271,754

METHOD OF AND APPARATUS FOR PRESSING OF LIQUIDS FROM SOLID MATERIALS

Thorsten Homann, Hamburg, Fed. Rep. of Germany, assignor to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,638
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751703
Int. Cl.³ B30B *9/02*
U.S. Cl. 100—37 **7 Claims**



1. A method of pressing a liquid in the form of oil from a solid material in the form of vegetable matter which comprises the steps of:

(a) pressing said material in a first stage to a peak pressure;

(b) immediately and directly thereafter spontaneously expanding the material from said peak pressure to atmospheric pressure;

(c) disrupting the orientation and continuity of the material as formed during the pressing in step (a); and

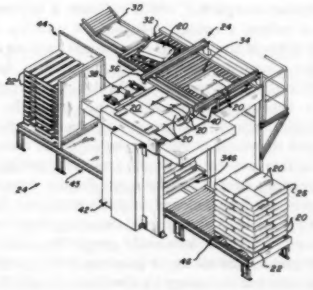
(d) immediately and directly repeating steps (a) through (c) at least once, each sequence of steps (a) through (c) constituting a respective stage.

4,271,755

BAG HANDLING APPARATUS

Dale I. Kintgen; William J. Mylrea, and William A. Smith, all of Littleton, Colo., assignors to Master Conveyor Corporation, Englewood, Colo.

Filed Oct. 25, 1978, Ser. No. 954,546
Int. Cl.³ B65G *57/24, 15/14;* B30B *15/14*
U.S. Cl. 100—52 **38 Claims**



1. In bag handling apparatus, the combination comprising: first means for flattening and distributing the material in a bag;

second means for metering a plurality of the bags in a series at spaced intervals at a controlled rate;

third means for turning the bags through selected angles to orient the bags for selected layer patterns, said third means rotating said said bags in increments of either 90°, 180° or 270° from any starting point;

fourth means for squaring and compacting the bags forming the selected layer pattern;

fifth means for depositing the layer pattern of bags onto a pallet;

sixth means for vertically compressing each layer as a stack of layers on the pallet after deposit onto said pallet, said sixth means for vertically compressing including a reversible electric drive motor arranged for raising and lowering the pallet with layers thereon and a control having a sensor for sensing the rate of change of current drawn by said drive motor while raising the pallet for automatically operating said motor responsive to the load on said motor resulting from a layer being compressed whereby, after a preselected compressing force is applied, said motor is stopped and reversed for applying a substantially uniform compression to each layer independently of the number of layers on the pallet; and

seventh means for providing a pallet, one at a time, for each loading cycle.

4,271,756

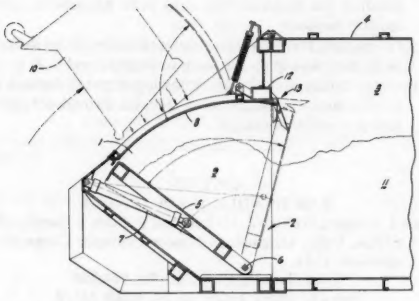
LOAD RETRACTION PREVENTING FINGER ARRAY

Darryl G. Bettencourt, Lodi, Calif., assignor to Blackwelders, Rio Vista, Calif.

Filed Dec. 18, 1979, Ser. No. 104,958

Int. Cl.³ B30B *15/00*

U.S. Cl. 100—220 **8 Claims**



1. In a refuse compactor which includes a hopper for the reception of refuse, a container forming a packing chamber, there being a throat between the hopper and packing chamber, and a power-actuated packing blade mounted in the hopper and operative upon advance of such blade to forcefully and recurringly thrust pre-deposited refuse from the hopper, through the throat, and into the packing chamber whereby the resultant load therein is ultimately placed under compression; a load retraction preventing finger array comprising a transversely extending row of spaced-apart fingers disposed adjacent the top of the throat, means pivotally mounting the fingers of said row for forward and upward swinging from an initially depending position to a forwardly projecting position, and means arranged so that all the fingers, upon the packing blade being advanced, are so swung by the blade to said forwardly projecting position; the forwardly projecting fingers, at least in part, being engaged, and held in such projection, by the load of refuse in the packing chamber when such load is under compression and tends to expand; a number of said fingers being of greater length than others thereof, and the fingers of greater length being, at least, those which in such projection are end-engaged by the compressed load of refuse.

4,271,757

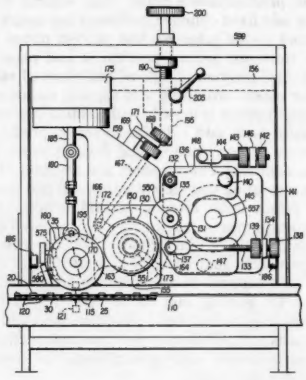
ROTARY OFFSET ARTICLE PRINTING SYSTEM

William E. Maxwell, Keene; Peter Jenness, III, Spofford, and Michael F. Potter, Keene, all of N.H., assignors to Markem Corporation, Keene, N.H.

Filed May 18, 1979, Ser. No. 40,301

Int. Cl.³ B41F *17/00*

U.S. Cl. 101—37 **26 Claims**



1. A rotary offset article printing system comprising:

(a) a die roll having an outside circumference to which is secured a printing die, the die roll being rotatably mounted on a first axis;

(b) means for applying ink to the printing die;

(c) an offset roll having an outside circumference which is positioned for rolling contact with the printing die to transfer from the printing die to the outside circumference of the offset roll printed indicia to be transferred to an article at a printing position, the offset roll being rotatably mounted on a second axis;

(d) means for continuously rotating the die roll and the offset roll respectively about the first and second axes, the linear velocity of the printing die and the linear velocity of the outside circumference of the offset roll being substantially identical;

(e) an article conveying means for carrying articles to be printed, the article conveying means being selectively movable at a linear velocity which is substantially identical to the linear velocity of the outside circumference of the offset roll and selectively stopped, the article conveying means accelerating from a stop to said linear velocity during the conveying of an article to be printed from a rest position to the printing position and moving uniformly at said linear velocity during the transfer of indicia from the offset roll to the article to be printed at the printing position, the rest position being located a predetermined distance from the printing position;

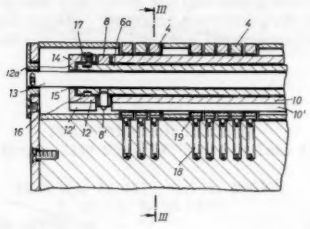
(f) drive means for causing the stopping and selective motion of the article conveying means at said linear velocity; and

(g) displacement means for selectively moving the offset roll between first and second positions, the outside circumference of the offset roll being out of contact with the article to be printed when the offset roll is in the first position and the article to be printed is at the rest position and the outside circumference of the offset roll being in rolling contact with the article to be printed when the offset roll is in the second position and the article to be printed isat the printing position.

4,271,758
SELECTIVE LOCKING DISPLAY WHEELS IN DIGIT PRINTERS

Klaus Osterhof, Berlin, Fed. Rep. of Germany, assignor to Maschinenbau "WAM" M. Osterhof KG, Berlin, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,398
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747559
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—110 **4 Claims**

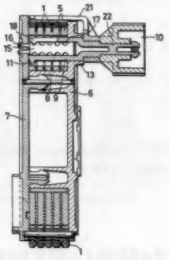


1. In a digit printer, having axially displaceable shaft means capable of assuming different axial positions, there being external means for providing rotation of the shaft means;
a set of print wheels and a set of display wheels;
a pair of spaced adjusting means on the shaft means;
one of the adjusting means of the pair being located near one end of the shaft means, and being provided for individual engagement with the display wheels, the other one of the adjusting means being located farther away from said one end and provided for individual engagement with the display wheels, whereby for each one of different axial positions of the shaft means, the one adjusting means engages different display wheels and the other adjusting means engages correspondingly different print wheels, the engagement changing upon axial displacement of the shaft means, the respective wheels being engaged by the respective adjusting means, being rotated upon rotation of the shaft means;
a first sleeve on the shaft means being located between the two adjusting means and provided for axially moving together with the shaft means
a second sleeve being located on the shaft means, on the other side of the other adjusting means, said second sleeve also provided for moving axially with the shaft means, the improvement comprising:
means for holding the first sleeve against rotation;
means on the first sleeve for holding any of the wheels located between the two adjusting means and preventing rotation of such wheels;
means for holding the second sleeve against rotation;
means on the second sleeve for holding any of the wheels upon being radially aligned therewith and preventing rotation of the wheels so held;
a locking member of the shaft means at said end and disposed next to the one adjusting means on the side opposite the first sleeve, the locking member connected for moving axially with the shaft means;
key means on the locking member having axial width for engaging and holding at least one of the display wheels upon radial alignment therewith, but said axial width being significantly less than needed to hold all display wheels;
said shaft means at said end being hollow;
a bar having a nonround cross section and traversing said locking member in keying relation and telescoping into the hollow interior of the shaft means;
means for holding the bar against rotation; and
said bar permitting axial displacement of the shaft means and the locking member relative to the bar as held by the means for holding, thereby holding the locking member against rotation due to said keying relation, whereby said locking member holds those wheels it engages.

4,271,759
PRINTING APPARATUS FOR USE WITH PRICE LABELLER OR THE LIKE

Heinrich Volk, Beerfelden, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,288
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838964
Int. Cl.³ B41K *1/10*; B41J *1/20*
U.S. Cl. 101—110 **17 Claims**



6. Printing apparatus comprising
a housing having at least two oppositely disposed side walls;
a plurality of sets of juxtaposed printing elements;
a plurality of internally toothed, annular setting wheels supported with respect to said housing for respectively positioning said printing elements;
a hollow, axially shiftable, setting shaft extending at least into said annular setting wheels, said setting shaft including (a) a drive member for engaging the internal teeth of a selected one of said setting wheels and (b) a detenting member; and
a pin mounted with respect to one of said side walls, said pin extending into said hollow setting shaft and including a plurality of detent recesses longitudinally extending along the surface of said pin, the distance between at least two of said recesses corresponding to the width of at least one of said setting wheels, said detenting member of the setting shaft engaging a selected one of the recesses for axially positioning the setting shaft at the setting wheel to be driven.

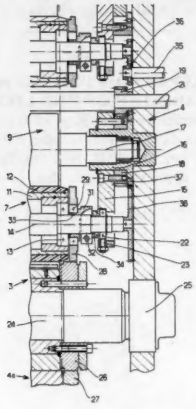
4,271,760
PRINTING MACHINES OF THE OFFSET TYPE

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Jul. 17, 1979, Ser. No. 58,266
Claims priority, application France, Jul. 27, 1978, 78 22240
Int. Cl.³ B41F *7/04, 31/34*
U.S. Cl. 101—142 **6 Claims**

1. An offset printing machine comprising a plate cylinder and a blanket cylinder respectively carrying roller tracks rolling on one another and determining the center distance between the two cylinders, at least one inking roller with a supple peripheral layer, fed with ink from an inking assembly, via ink vibrator cylinders and an inking cylinder, said inking roller being carried by levers pivoted about the axis of the inking cylinder and carrying roller tracks in contact with those of the plate cylinder for controlling the pressure contact between the inking roller and the plate cylinder, and the crushing of the supple peripheral layer of the inking roller, wherein the shaft of the inking roller is mounted in its roller tracks via eccentric

hubs locked on the shaft and pivoting in the roller tracks via bearings, and one end of this shaft is fast with a gear coupled to



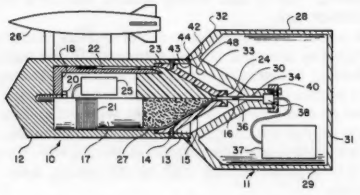
a control shaft for adjusting the pressure contact of the inking roller upon the plate cylinder.

4,271,761

HIGH ACCELERATION CABLE DEPLOYMENT SYSTEM

Thomas N. Canning, Sunnyvale; Christopher E. Barns, Mountain View; James P. Murphy; Bobby Gin, both of San Jose, and Robert W. King, Saratoga, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 23, 1979, Ser. No. 32,305
Int. Cl.[3] F42B *13/56*
U.S. Cl. 102—504 **13 Claims**



1. An umbilical cable deployment system comprising:

a ballistic forebody with an afterbody detachably engaged thereto;

said forebody having a supply of cable with the distal end of said cable being anchored to said afterbody;

means within said forebody for causing said cable to be deployed in a helical pattern with rotational energy when said forebody is separated from said afterbody;

means within said forebody for dissipating some of said cable rotational energy, said dissipating means including a member adapted to be temporarily secure a section of said cable and be abraded by said cable when said forebody is separated from said afterbody said dissipating means including a drag funnel and said member being a low density plug that tightly fits within the interior of said drag funnel and presses said section of said cable against said funnel inner surface prior to a forebody/afterbody separation; and

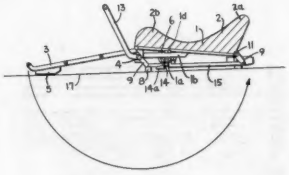
means within said afterbody for dissipating some of said cable rotational energy.

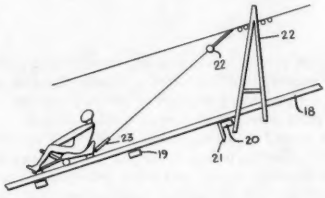
4,271,762

PLEASURE VEHICLE AND A TRANSPORTATION SYSTEM UTILIZING THE SAME

Josef Wiegand, Landstrasse 12, 6419 Rasdorf, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 900,891
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736731; Sep. 19, 1977, 2742141
Int. Cl.[3] A63G *21/02*; B61B *9/00, 12/12*
U.S. Cl. 104—69 **6 Claims**





1. A pleasure vehicle for use on a downhill track, comprising in combination:

a vehicle body,

a leg support pivotally mounted on said vehicle body, and extending frontwardly from said vehicle body,

support means for supporting the vehicle on the track for downward movement thereon, including respective support elements on said vehicle body and on said leg support,

a plurality of brake shoes operative for braking said vehicle body, each mounted on said vehicle body for displacement between an extended and a retracted position,

displacement means for simultaneously displacing said brake shoes to contact the track, and so support said vehicle body thereon so that all of said support elements of said vehicle body are out of contact with the track, while said support elements of said leg support continue to support said leg support on the track and thus guide the vehicle thereon, said displacement means including means for urging said brake shoes toward said extended positions,

an actuating lever pivotally mounted on said vehicle body and operative for displacing said brake shoes from said extended position to said retracted position, so as to discontinue the braking by the brake of said shoes, and

a seat mounted on said vehicle body, said urging means including transmitting means including a plurality of transmitting links articulated to said seat and to said brake shoes, respectively, for transmitting at least a part of the weight of said seat and any additional weight resting thereon to said brake shoes, to urge said brake shoes toward said extended position, and wherein said seat rises relative to said vehicle body as said actuating lever displaces said brake shoes towards said retracted position.

3. A pleasure ride arrangement, comprising in combination:

at least one pleasure vehicle,

a tow for towing the vehicle uphill,

an uphill track arranged underneath said tow,

a downhill track separate from said uphill track,

means for connecting said vehicle to said tow, including a connecting eyelet and a connecting hook which is rapidly engageable in said eyelet at a downhill station and disengageable therefrom at an uphill station of the tow, and which has an end portion which extends beyond said eyelet in the engaged position of the connecting means, said vehicle being capable of assuming different positions on said uphill track while being towed on said uphill track by said tow,

means for automatically disengaging said connecting means at said uphill station only in one of said different positions of said vehicle, and

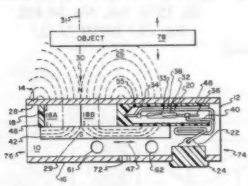
means on said uphill track at least at said uphill station for bringing said vehicle into, and maintaining said vehicle in said one position, including correction rails extending longitudinally of said uphill track and engaging said vehicle.

4,271,763

PROXIMITY DETECTOR

Philip H. Berger, 2250 Pheasant Way, Salt Lake City, Utah 84121

Filed May 15, 1978, Ser. No. 905,871
Int. Cl.³ B61B *12/06*
U.S. Cl. 104—179 **10 Claims**



1. A detector for detecting the proximity of a ferromagnetic object comprising:

a substantially non-ferromagnetic chassis having a front and a rear:

magnet means comprised of a pair of substantially adjacent cylindrically shaped magnets positioned within said chassis proximte said front with the axis of each cylindrical magnet substantially normal thereto to produce a combined magnetic flux field about said magnets having an axis substantially normal to said front and wherein said magnetic flux field forms a pair of opposite magnetic poles along said axis;

a switch having contacts operable by magnetic flux, said switch being positioned proximate said front and said magnet means within said chassis with said contacts in the portion of the magnetic flux field which is essentially parallel to the axis of said magnetic flux field for operation by said field;

conductor means conductively connected to said switch;

connector means conductively connected to said conductor means and positioned with respect to said chassis for external connection to external circuit means;

shield means positioned within said chassis between the rear of said chassis and said magnet means and between the rear of said chassis and said switch to shield said magnet and said switch from extraneous magnetic fields and to focus said magnetic flux for operation of said contacts; and

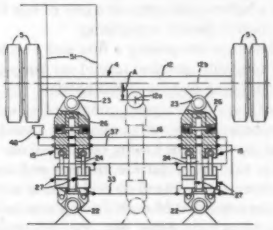
wherein said flux field is strengthened by a ferromagnetic object positioned within a predetermined distance from the front of said chassis and weakened upon positioning without said predetermined distance to cause the contacts of said switch to operate in relation to the positioning of said object and in turn send an operate signal reflective of said positioning to said external circuit via said conductor and connector means.

4,271,764

VEHICLE ADAPTED TO BE GUIDED ON TRACKS FOR THE PUBLIC LOCAL PASSENGER TRAFFIC WITH PIVOTAL REAR AXLE AND LONGITUDINAL GUIDE MEMBERS FOR SUCH AXLE

Dieter Braun, Weinstadt; Herbert Mehren, Ludwigsburg, and Helmut Wulf, Ostfildern, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,108
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813437
Int. Cl.³ B62D *1/26*; B61F *9/00*
U.S. Cl. 104—247 **33 Claims**



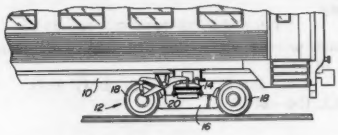
1. A vehicle adapted to be selectively operated with or without guide rails, the vehicle comprising a steerable vehicle axis means having steerable wheels mounted thereon, at least one nonsteerable vehicle axle having nonsteerable wheels mounted thereon, means for pivotally mounting the nonsteerable axle means so as to be entirely pivotable to a limited extent about a centrally positioned vertically extending pivot axis, and at least two longitudinal control arm means for determining a transverse position of the nonsteerable axle means, said longitudinal control arm means each being constructed so as to be variable in length and selectively lockable in or releasable from a predetermined length required for an exact transverse positioning of the nonsteerable vehicle axle means when the vehicle is operated without guide rails, characterized in that each of the longitudinal control arm means is provided at respective ends thereof with a mounting means, a first mounting means of the respective longitudinal control arm means being operatively connected with a bending-resistant guide rod means and a second of the mounting means being operatively connected with a guide housing means which is provided with a guide bore means for slidably receiving the guide rod means with a predetermined amount of play, at least two double-acting hydraulic piston-cylinder means are provided for each of the longitudinal control arm means, means are provided for operatively connecting each of the hydraulic piston-cylinder means to the first and second mounting means so that the hydraulic piston-cylinder means are disposed in parallel to the guide rod means, the connecting means being arranged eccentrically with respect to at least one of the guide rod means and the guide bore means, means are provided for selectively locking and releasing the longitudinal control arm means in and from an extended position of a predetermined length required for an exact transverse positioning of the nonsteerable vehicle axle means, each of the piston-cylinder means includes working chamber means, and in that means are provided for communicating the respective working chamber means of the cylinder-piston means of the respective longitudinal control arm means with each other.

4,271,765

RAILWAY CAR TILTING STABILIZING SYSTEM

William W. Dickhart, III, Fort Washington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jun. 21, 1979, Ser. No. 50,830
Int. Cl.³ B61F *3/08, 5/24, 5/50*
U.S. Cl. 105—164 **10 Claims**



1. In combination with a railway car body and a supporting truck having a bolster connected to a pair of side frames of said truck, a tilt control system comprising:

(a) a bar structure comprising a first and a second rotatable member rotatably attached to said car body on both sides between said car body and said bolster,

(b) a pair of lever arms rigidly connected to said two rotatable members and operably connected to said bolster, and

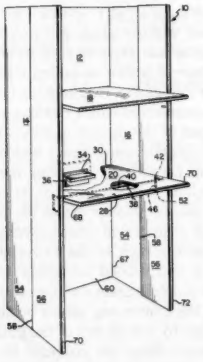
(c) a pair of driving arms having one end of one driving arm secured to said first rotatable member and one end of the other driving arm secured to said second rotatable member and the other end of each driving arm being in spaced relationship to each other and operably connected to a reversible driving means for movement toward and away from each other upon actuation of said driving means whereby tilt control is accomplished by selectively rotating said rotatable members in opposite directions and toward each other to move said lever arms to force said car body to tilt with respect to said truck.

4,271,766

COLLAPSIBLE DISPLAY SHELF

Edward A. Schmiedeler, Prairie Village, Kans., assignor to Sandy, Inc., Kansas City, Mo.

Filed Jul. 27, 1979, Ser. No. 61,284
Int. Cl.³ A47B *43/02*
U.S. Cl. 108—111 **5 Claims**



1. A collapsible display shelf comprising:

a back wall;

a pair of opposed sidewalls extending outwardly from said back wall in perpendicular relationship to the back wall when the display shelf is in a use condition, said sidewalls each having a front section and a rear section, there being a fold line between said sections to permit collapsing of said sidewalls into overlying relationship to the back wall when the display shelf is in a storage condition;

at least one shelf disposed in a horizontal plane between said sidewalls when the display shelf is in said use condition, said shelf having a forward marginal edge and a rear marginal edge;

a wire carried by said sidewalls and spanning the distance therebetween for swingably mounting said shelf whereby it may be swung from its horizontal condition of use to a vertical storage condition overlying said collapsed sidewalls and said back wall, said wire having a central length extending through the forward marginal edge of the shelf and a portion at each end extending perpendicularly to said central length, said portions each being receivable within a recess formed in corresponding front sections of the sidewalls when the display shelf is in a condition of use; and

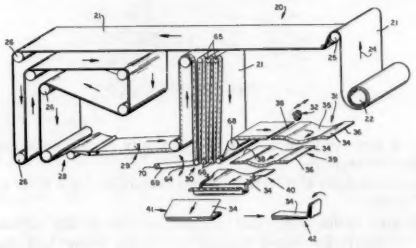
means on the rear marginal edge of the shelf for engaging the back wall, whereby to stabilize the shelf in said horizontal plane when the display shelf is in said condition of use.

4,271,767

SHEET PRODUCTION SYSTEM

Perry E. Burton, and Charles E. Brocklehurst, both of Fountain Inn, S.C., assignors to Opelika Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 956,792, Nov. 1, 1978. This application Apr. 30, 1979, Ser. No. 34,402
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—2 **13 Claims**



1. Apparatus for cutting and hemming sheet material comprising means for moving sheet material along its length from a supply toward a cutting station, first clamp means at the entrance of the cutting station for holding the sheet material, gripping means movable between the entrace of the cutting station to the other side of the cutting station, a first pair of parallel conveyor tapes positioned in said cutting station, clamp means movable toward and away from said parallel conveyor tapes for urging the segment of the sheet material in the cutting station against the conveyor tapes, and means movable into the segment of the sheet material in the cutting station for forming slack in the sheet material.

9. Apparatus for cutting and hemming sheet material comprising means for moving sheet material along its length from a supply toward a cutting station, first clamp means at the entrance of the cutting station for holding the sheet material, gripping means movable between the entrace of the cutting station to the other side of the cutting station, a first pair of parallel conveyor tapes positioned in said cutting station, clamp means movable toward and away from said parallel conveyor tapes for urging the segment of the sheet material in the cutting station against the conveyor tapes, and cutting means at the entrance of said cutting station for cutting the segment of the sheet material in the cutting station away from the supply.

13. In a sheet cutting apparatus wherein sheet material is moved from a supply along its length to a cutting station, the improvement therein of movable support means adjacent the

entrance to said cutting station for supporting the leading edge portion of the sheet material in a horizontal attitude, a gripping means comprising a lower clamp member movable into abutment with said movable support means to move the movable support means inwardly beneath the leading edge portion of the sheet material and to move the lower clamp member beneath the leading edge portion of the sheet material, and an upper clamp member positioned above said lower clamp member and means for moving said upper and lower clamp elements together about the leading edge portion of the sheet material to grip the sheet material.

4,271,768

ASSEMBLY FOR FORMING PIPED-EDGE OPENINGS IN A FABRIC WORKPIECE

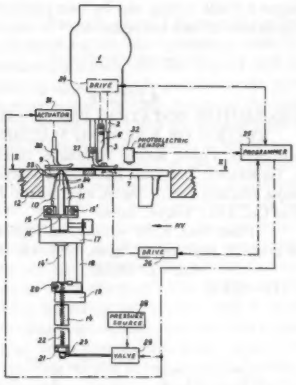
Heinz Goldbeck, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,398

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932664

Int. Cl.³ D05B *3/06*

U.S. Cl. 112—68 **4 Claims**



1. An assembly for forming a piped-edge opening in a workpiece, comprising:

a work table;

sewing means including a sewing machine on said work table for stitching a pair of parallel seams in said workpiece and in a reinforcing strip laid thereon;

first severing means mounted on said table for cutting a slit in said workpiece and said strip between said seams;

transport means mounted on said table and engageable with said workpiece and said strip for advancing same past said sewing machine and said severing means;

second severing means mounted on said table downstream of said sewing machine and said first severing means along said path for cutting a pair of angular incisions in said workpiece and said strip at opposite ends of said slit, said second severing means including two angular cutters fixed with respect to one another and facing in opposite directions, said cutters being shiftably mounted on said table for vertical reciprocation;

actuating means connected to said second severing means for reciprocating said cutters; and

spreading means synchronized with said cutters for entering and widening said slit at said ends to enable first one and then the other of said cutters to traverse said slit upon a pair of consecutive upward strokes of said cutters, whereby same alternate in severing said workpiece and said strip.

4,271,769

MACHINE FOR PRODUCING A TEXTILE PRODUCT

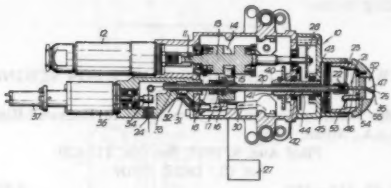
William J. Barnes, Disley, England, assignor to Newroyd Limited, Oldham, England

Filed Oct. 31, 1979, Ser. No. 89,727

Claims priority, application United Kingdom, Nov. 10, 1978, 44042/78

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 FF **14 Claims**



1. A machine for producing a textile product, the machine having a needle provided with a leading end portion which extends non-axially with respect to the main portion of the needle, means for reciprocating the needle, in a predetermined needle reciprocation stroke, into and out of backing material and for effecting relative traversing movement therebetween, and means for ensuring that the leading end portion is inclined away from the direction of the said relative traversing movement throughout the latter, the said leading end portion having an axial length at least as great as the length of the needle reciprocation stroke.

4,271,770

PUNCHED CARD CONTROL SYSTEM FOR EMBROIDERY MACHINE

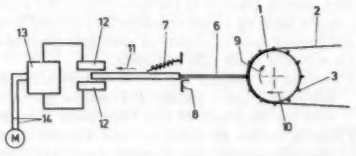
August Heinzle, Altweg 9, A-6844 Altach, Austria

Filed Feb. 20, 1980, Ser. No. 122,846

Claims priority, application Austria, Feb. 20, 1979, 1305/79

Int. Cl.³ D05C *5/04*

U.S. Cl. 112—84 **5 Claims**



1. A punched card control system for an embroidery machine which includes an embroidery creel and a first drive mechanism for driving the embroidery creel, comprising a number of elongated movable lifter rods each arranged to sense a different hole in successive groups of holes punched in a card, each group of holes representing an operating instruction for the embroidery machine, said lifter rods being out of contact with the first drive mechanism, feed means for advancing the card past said lifter rods while each rod is in a rest position relative to said feed means so that each group of holes in the card successively confronts corresponding ends of said lifter rods in the rest position, means for applying a bias force to each of said lifter rods to urge said lifter rods toward the rest position, means for moving said feed means to displace the card a certain distance toward said lifter rods so that those lifter rods whose ends confront holes in the card remain in the rest position and the remaining lifter rods are contacted at their ends by the card wherein said remaining lifter rods are moved from the rest position, said feed means applying a displacement force to the card sufficient to overcome said bias force applied

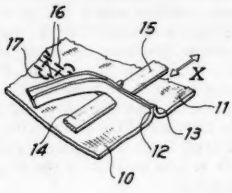
to said remaining lifter rods and to move said remaining lifter rods from the rest position, reading means including a number of electrical switching elements directly responsive to the position of each of said lifter rods for detecting the position of each of said lifter rods and providing corresponding electrical output signals over a number of line channels, and control means coupled between said channels of said reading means and the first drive mechanism for controlling the first drive mechanism to adjust the embroidery creel in accordance with the electrical output signals provided over said channels of said reading means.

4,271,771

WORKPIECE TRIMMING DEVICE FOR SEWING MACHINES

Egidio Pedone, Corsico, Italy, assignor to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Aug. 6, 1980, Ser. No. 175,629
Int. Cl.³ D05B *37/04*
U.S. Cl. 112—122 **4 Claims**



1. A workpiece trimming device for sewing machines of the type including a needle plate mounted on the machine's work-surface and a presser bar for supporting a presser foot for cooperation with feeddogs operatively associated with the needleplate, said trimming device compising:

(a) a fixed blade **(14)** horizontally mounted within the presser foot to extend perpendicular to the direction of workpiece advancement;

(b) a presser spring **(34)** operatively associated with the presser bar for continually urging the latter and presser foot carried thereby in the direction of the needleplate;

(c) means defining a guide passage **(52)** formed in one side of the presser foot in alignment with said fixed blade **(14)**;

(d) a movable blade **(15)** including:

(i) means for supporting it for reciprocating movement within said guide passage **(52)** and in operative contact with the underside of said fixed blade **(14)**; and

(e) biasing means mounted on said supporting means for continually urging said movable blade **(15)** into engagement with said fixed blade **(14)** and in a direction opposite to the direction of force provided by said presser spring **(34)** on the presser foot.

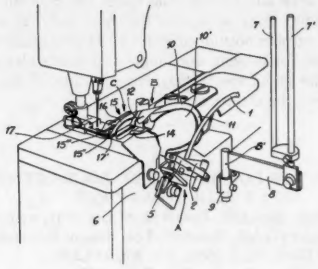
4,271,772

SEWING MACHINE ATTACHMENT FOR EDGINGS AND COLLARS

Ugo Pignatti, Via M. Buonarroti, 2, 46024 Moglia (Mantova), Italy

Filed Sep. 11, 1978, Ser. No. 940,964
Claims priority, application Italy, Sep. 14, 1977, 22209/77[U]
Int. Cl.³ D05B *35/06*
U.S. Cl. 112—137 **7 Claims**

1. A sewing machine attachment effective to be applied to a sewing machine for sewing edgings, collars and like finishing elements to knitted outwear articles, which comprises, in the feeding direction, a pre-shaping portion fitted with a braking member applied at the lower edge of the finishing element and effective to maintain the finishing element in an exactly tensioned or stretched condition; a second portion fitted with a folding or bending member effective to fold or bend the raw edge of said finishing element opposite to said lower edge having loops to form a fold having two members, and a third portion fitted with guiding means effective to guide the folded or bent edge of said finishing element in alignment with the



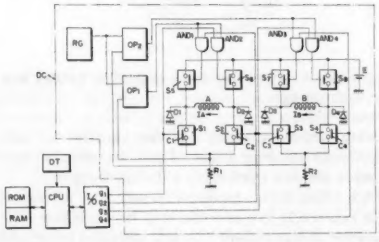
knitted article to be sewn, whereby said knitted article is interposed between said two members of said fold, wherein said braking member is formed by a curved rod, onto the bottom of which urges a blade spring and by two parallel vertical rods located upstream of said curved rod.

4,271,773

PULSE MOTOR ROTATION PHASE ADJUSTING SYSTEM OF A SEWING MACHINE

Hachiro Makabe, Fussa; Kazuo Watanabe, Hachioji; Toshiaki Kume, Tachikawa; Toshihide Kakinuma, Tokyo, and Hideaki Takenoya, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,674
Claims priority, application Japan, Mar. 11, 1978, 53-27951
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **3 Claims**



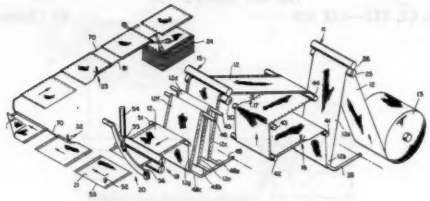
1. A pulse motor rotation phase adjusting system for a sewing machine, comprising a pulse motor adapted for positioning a needle of the sewing machine in accordance with the predetermined stitch coordinates of a selected pattern, said pulse motor having at least two windings each being energized to produce magnetic forces in the opposite directions, the pulse motor being set to one of the stepping rotation phases in dependence upon one or more predetermined combination of the magnetic forces of the windings; phase detector means operatively connected to said pulse motor for detecting the respective rotation phases of the pulse motor wihtin a range corresponding to the maximum needle swinging amplitude to produce a signal corresponding to said one or more predetermined combinations of the magnetic forces; and control means operative to selectively rotate the pulse motor in two opposite directions in response to said signal and reset the pulse motor to its initial position to thereby positon the needle in accordance

with said predetermined stitch coordinates at the time when electric power is applied to the sewing machine.

4,271,774
CUTTING AND HEMMING SYSTEM

Perry E. Burton, Atlanta, Ga., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 799,286, May 23, 1977, Pat. No. 4,154,180. This application Mar. 19, 1979, Ser. No. 21,792
Int. Cl.[3] D05B 97/00
U.S. Cl. 112—262.1 **4 Claims**



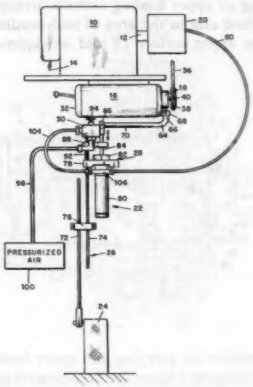
1. In a method of forming folded hems in the edge portions of the sheets of cloth and the like wherein a series of sheets of cloth are moved along a path with the edge of each sheet to be hemmed extending approximately parallel to the path and the edge portion of each sheet of cloth is moved through a folder and folded over in the folder and the folded edge portion is moved through a sewing machine and is sewn, the improvement therein of prior to the step of sewing the folded edge portion moving a band member along its length into contact with each sheet of cloth at a position adjacent its folded edge portion and moving the band member along its length while in contact with each sheet of cloth adjacent the sewing machine at a linear velocity approximately the same as the rate at which the edge portions of the sheets of cloth are moved through the sewing machine, detecting the trailing edge of each sheet of cloth as the trailing edge of each sheet of cloth approaches the sewing machine, and decreasing the linear velocity of the band member in response to the detection of the trailing edge of each sheet of cloth to retard the movement of the trailing edge of the sheet of cloth at a position adjacent the folded over edge portion so that the trailing edge of the folded over edge portion becomes located ahead of the trailing edge of the sheet of cloth.

4. In apparatus for forming folded hems in the edge portions of lengths of cloth and the like including means for moving cloth lengths in sequence along a path with the edges to be hemmed extending along the path, folding means positioned at one edge of the path for folding over the edge portion of the cloth lengths, a sewing machine adjacent said folding means for sewing through the folded edge portion of each cloth length, said sewing machine including feed dogs for pulling the folded edge portion through the sewing machine, detecting means for detecting the movement of the trailing edge portions of the lengths of cloth into said sewing machine, endless band means including a lower flight movable along its length into contact with and along the path of the lengths of cloth as the lengths of cloth move through said folder and sewing machine at a position adjacent the folded edge portion of the lengths of cloth, said endless band means being responsive to said detecting means to decrease the rate of movement of its lower flight to a rate slower than the rate at which the feed dogs of the sewing machine pull the lengths of cloth through the sewing machine to retard the movement of the portion of the lengths of cloth adjacent the folded edge portion thereof as the sewing machine sews through the folded edge portion at the trailing edge portion of the lengths of cloth.

4,271,775
NEEDLE POSITIONER FOR HIGH SPEED STITCHING MACHINES

William A. Tice, Knoxville, Tenn., assignor to Tice Engineering & Sales, Inc., Knoxville, Tenn.

Filed Aug. 17, 1979, Ser. No. 67,702
Int. Cl.[3] D05B 69/22
U.S. Cl. 112—276 **4 Claims**



1. A system for positioning the needle of a stitching machine of the high speed type which includes a main drive motor having a brake associated therewith which is actuatable by generally lineal movement of a member thereof, a needle reciprocatory mechanism including shaft means positively connected in driving and stopping relationship to said drive motor, a pneumatically powered needle positioning mechanism connected to said shaft means, a foot pedal, a pitman rod, means connecting one end of said pitman rod to said foot pedal, a piston-cylinder device secured to said pitman rod and with its piston member operatively connected to said brake actuating member, normally closed valve means secured to said pitman rod in a location adjacent a stationary member, said valve means including plunger means projecting therefrom and operable to selectively open said valve means for the flow of pressurized air therethrough or to close said valve, said plunger being disposed adjacent said stationary member whereby movement of said foot pedal to activate said drive motor and commence a stitching operation moves said valve means away from said stationary member and said plunger moves to a position which results in closing of said valve means and whereby movement of said foot pedal to a position for stopping a stitching operation moves said valve toward said stationary member to move said plunger to a position which results in opening of said valve, a source of pressurized air, conduit means connecting said source of pressurized air to said valve means, further conduit means connecting said valve means to said piston-cylinder device and to said needle positioning mechanism for providing an actuating force for each.

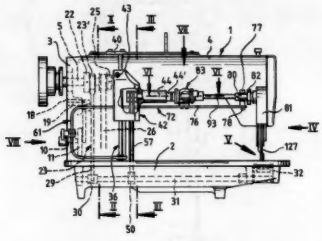
4,271,776
WORKPIECE FEEDING DEVICE FOR A SEWING MACHINE

Günter Landwehr, and Horst Thiele, both of Bielefeld, Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 77,143
Int. Cl.[3] D05B 27/22
U.S. Cl. 112—311 **2 Claims**

1. In a sewing machine having a workpiece supporting base plate, a standard and an overhanging arm carrying a presser bar, a movable needle and a longitudinally extending arm shaft for driving said needle, a workpiece feeding device having a

lower feeding means including a feed dog engaging the lower surface of a workpiece, a mechanism synchronously driven relative to said needle for imparting a four motion feeding movement to said feed dog and having regulating means for reversing said feeding movement while said sewing machine is operative or inoperative, and transmitting means connecting said mechanism with said feed dog including an oscillating shaft transmitting a partial movement of said four motion feeding movement as a feed and idling motion; an upper feeding means having an upper feeding element arranged to cooperate with said feed dog in the area of said needle in a steady contact with the upper surface of said workpiece, a bracket



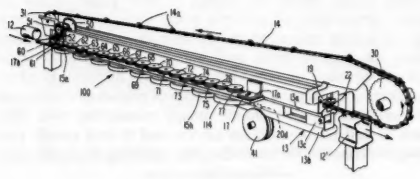
secured to said presser bar carrying said upper feeding element and means for driving said upper feeding element comprising a housing clamped to a vertical bar fastened to said standard, a first shaft pivoted in said housing, a one-way coupling received on said first shaft, a driving connection between said oscillating shaft and said one-way coupling, a second shaft pivoted on said overhanging arm and drivingly connected to said upper feeding element, and a device having a clutch element and a reversing gear means shiftably connecting said first shaft with said second shaft, and a shifting mechanism between said regulating means and said clutch element and said reversing gear means for an alternate engagement.

4,271,777

APPARATUS FOR REFORMING ROUND CANS INTO RECTANGULAR CANS

Floyd A. Collins, and Joseph L. Spychalski, both of Geneva, N.Y., assignors to American Can Company, Greenwich, Conn.

Filed May 7, 1979, Ser. No. 36,451
Int. Cl.³ B21D *5/08*
U.S. Cl. 113—1 G **3 Claims**



1. Apparatus for re-shaping a round container into a rectilinear shape comprising:

a. a frame;

b. support means attached to the frame;

c. anvil means supported by said support means, said anvil extending from a container entrance end to a container exit end, said anvil being operable to receive a round container at said entrance end, said anvil means increasing in height from the entrance end to the exit end;

d. Means for conveying the container from the entrance to the exit end of the anvil means;

e. Forming means for displacing inwardly the round side of the container moved from the entrance end to the exit end of said anvil means, so as to form the round container into a generally rectilinear cross-section;

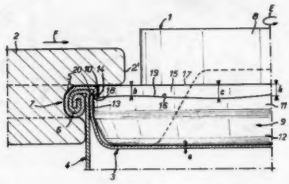
f. Paneling means to impart a permanent crease in the container along lines defining the edges of a rectilinear cross-section configuration.

4,271,778

CONTAINER SEAMING CHUCK

Lucien Le Bret, Saint-Gratien, France, assignor to Gallay, S.A., Paris, France

Filed Jul. 5, 1979, Ser. No. 54,972
Claims priority, application France, Jul. 7, 1978, 78 20321
Int. Cl.³ B21D *51/32*
U.S. Cl. 113—121 AB **13 Claims**



1. In an apparatus for attaching a cup shaped end member to the end of the body member of a container by a seaming process with the end member having a side portion fitted against the internal wall surface of the body member, whereby the edges of the members are rolled into a seam to form a plurality of layers of material extending radially outwardly of the container in a first zone at the terminal end of the container and extending away from the end of the container along the outer side surface thereof in a second zone spaced from the terminal end of the container, said apparatus including a seaming chuck having a lower end disposed within the bottom of the container end member and an upper end separated from the lower end by an outer peripheral edge surface engageable within the end member along the side portion thereof for rotating the container end and body members against a radially outwardly opposed forming wheel to form the rolled seam, the improvement wherein:

(a) the seaming chuck includes a radially inwardly disposed recess extending substantially entirely around the peripheral edge surface of the chuck, said recess being vertically aligned with respect to the opposed forming wheel and facing radially outwardly at the level of said first zone to provide a space for radially inward movement of the layers of material of the container end and body members in said first zone during formation of the rolled seam.

4,271,779

ANTI-BROACHING SIDEHULL FENCE FOR A SURFACE EFFECT SHIP

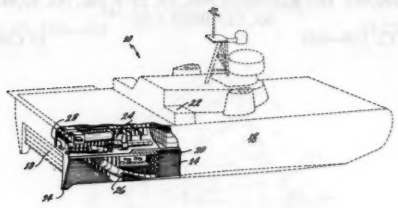
Michael A. Rickards, La Jolla, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 16, 1979, Ser. No. 39,658
Int. Cl.³ B60V *3/06*
U.S. Cl. 114—67 A **4 Claims**

1. Improved anti-broaching sidehull fences for a surface effect ship designed to travel at high speed substantially over water surface, said surface effect ship having a stern transom, central supporting plenum chamber containing gas under pressure, said plenum chamber is defined by a pair of spaced apart rigid sidehulls with extending fences, a wet deck and bow and stern seals, the water surface below the plenum chamber being depressed below the undisturbed water surface due to the weight of the surface effect ship thereon comprising:

the water contacting surface of said sidehull fences extending downward from said sidehull at least from the bow seal to the transverse center line of said sidehull fences, the

downward extending hull fence surface being substantially parallel and slightly below the depressed water surface when said surface effect ship is traversing said water surface at high speed whereby the gas under pressure is substantially confined to said central supporting plenum chamber and said sidehull fences provide minimum sealing drag within the water and the boundary of the sidehull fences relative to said undisturbed water surface is determined by the following equation:



$$\delta = \frac{PC}{\rho g}\left[0.77\cos\left(\frac{2\pi X}{L}\right) + 1.012\frac{X}{L} + 0.264\right]$$

wherein:

$$C = A\,k\sin^2\left(\frac{\pi}{2}\left(\frac{F_H}{F}\right)^{\frac{k}{2}}\right)$$

$$k = 3\cos\frac{\frac{L}{B}}{\sqrt{\frac{1}{\pi}} + \frac{2}{\pi}\left(\frac{L}{B}\right)} + 1$$

$$F_H = 0.025\,(L/B)/2 + \sqrt{\frac{1}{\pi}}$$

$$A = \pi\left[\left(1 - \left(\frac{F_H}{F}\right)\right)\sin\left(\frac{\pi(L/B)}{\frac{L}{B}+1}\right) + 1\right]$$

where

- B Air plenum (cushion) beam (FT)
- g Acceleration of gravity=32.174 (FT/SEC^2)
- L Air plenum (cushion) length (FT)
- P Air plenum (cushion) pressure (PSFG)
- X Reference axis in the direction of motion with the origin at the center of pressure of the cushion planform area (mid-cushion for a rectangular pressure patch) (FT)
- ρ Density of water=1.99 (Slugs/FT^3)
- C Resistance (wave drag) coefficient=$(\rho gR/p^2B)=(\rho g/P)\,(z_{Save}-Z_{Bave})$
- δ Required dimensionless depth of instant invention=$\rho g/PC$
- F Froude Number based on the cushion length
- F_H Froude Number at primary hump.

4,271,780

APPARATUS FOR MANEUVERING A SHIP

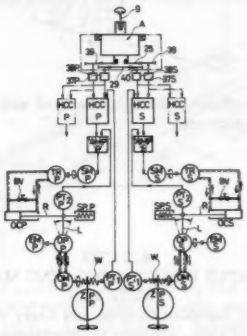
Akio Etoh, Kawasaki, Japan, assignor to Niigata Engineering Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,140

Claims priority, application Japan, Dec. 6, 1978, 53-168279[U]

Int. Cl.^{3} B63H *25/00*

U.S. Cl. 114—144 E **14 Claims**



1. Apparatus for maneuvering a ship having Z-type propeller structure comprising;

a generally cylindrical rotation frame rotatably supported by a stationary frame,

a rotation shaft disposed along a diametrical direction of the rotation frame;

a maneuvering handle positioned at the approximately central portion of the rotation shaft, the lower end of the maneuvering handle connected to the rotation shaft and the rotation shaft being rotated about its axis by the pivotal movement of the handle;

transducer means for converting movement of the handle into corresponding movement of said Z-type propeller structure;

a first gear transmission mechanism for transmitting the rotation of the rotation frame to the transducer means to actuate the same to thus generate signals to direct propeller shafts of the Z-type propeller structure by an equal angle and to the direction equal with each other; and

a second gear transmission mechanism for transmitting the pivotal movement of the handle to the transducer means to actuate the same to thus generate signals to direct the propeller shafts of the Z-type propeller structure by an equal angle and to the direction opposite with each other.

4,271,781

OUTBOARD MOTOR CLUTCHES

David B. Cowie, 18 Monteith Dr., Clarkston, Renfrewshire, Scotland

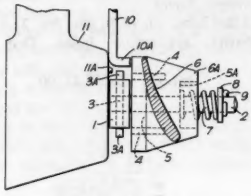
Filed Oct. 25, 1978, Ser. No. 955,479

Int. Cl.^{3} B63H *23/30*

U.S. Cl. 440—113 **10 Claims**

1. An outboard motor propulsion unit for a watercraft provided with a clutch between the output shaft of the unit and the propeller, said clutch comprising a thrust bearing secured to said shaft, interengageable clutch members on the thrust bearing and on the hub of the propeller, a spring urging the propel-

ler axially along the shaft towards the thrust bearing to effect driving engagement of said members, and a manual control



member for effecting disengagement of said members and permitting engagement.

4,271,782

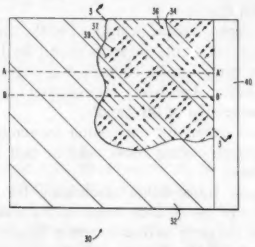
APPARATUS FOR DISORIENTING MAGNETIC PARTICLES

Geoffrey Bate, Sunshine Canyon, and Larry P. Dunn, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 912,800, Jun. 5, 1978, Pat. No. 4,208,447. This application Oct. 23, 1979, Ser. No. 87,364

Int. Cl.³ B05B 5/02

U.S. Cl. 118—623 **6 Claims**



1. An apparatus for magnetically disorienting magnetic particles in a solution coated on a substrate, said substrate moving in a plane, comprising:

a first plurality of magnetic means having a first magnetic field direction;

a second plurality of magnetic means having a second magnetic field with a second magnetic field direction, arranged so that each of said first and second plurality of magnets is juxtaposed in side-by-side relationship in alternating order; and

connecting means for supporting the combination of said first and second pluralities of magnets in said juxtaposed alternating order along the plane of the substrate in a pattern of diminishing strength in the direction of travel of the substrate, whereby an alternating sequence of diminishing fields is created along the path of travel of said substrate;

and characterized in that said first magnetic direction of said first plurality of magnetic means is at a first angle to the direction of movement of said substrate, and

said second plurality of magnetic fields is juxtaposed to said first plurality of magnetic means so that the aforesaid second magnetic field direction is at a second angle disposed substantially perpendicular to that of the first magnetic field direction.

4,271,783

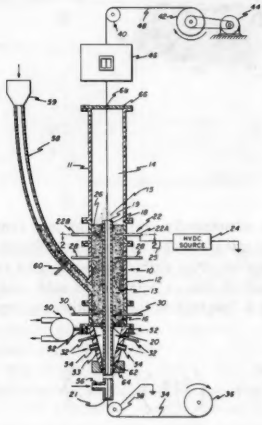
APPARATUS FOR FLUIDIZED BED-ELECTROSTATIC COATING OF INDEFINITE LENGTH SUBSTRATE

John H. Lupinski, Scotia, and Bernard Gorowitz, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 871,153, Jan. 20, 1978, Pat. No. 4,188,413, which is a division of Ser. No. 733,236, Oct. 18, 1976, Pat. No. 4,100,883. This application Nov. 14, 1979, Ser. No. 93,993

Int. Cl.³ B05B 5/02

U.S. Cl. 118—629 **12 Claims**



1. An apparatus for continuously coating an elongate electrical conductor, comprising:

(A) a container having a lower portion for containing a fluidized bed of electrically chargeable powder and an upper portion adjoining the lower portion for deposition of electrically charged powder onto the conductor,

(B) a hollow member disposed in the lower portion of the container and providing a passageway from the exterior of the container to the interior of the container, said hollow member having an upwardly extending portion terminating in an open upper end defining an interface between the upper and lower portions of the container,

(C) a porous member adapted to pass a gaseous medium therethrough and upwardly through the bed, said porous member disposed at a lower end of the lower portion of the container,

(D) means for vibrating the container and for cooperating with the gaseous medium to fluidize the bed to an extent such that the fluidized bed has a substantially uniform upper surface below said open upper end of said hollow member,

(E) means for advancing an elongate electrical conductor along a path through said hollow member, upwardly out of said upwardly extending hollow member portion, and through the top of the upper container portion, and

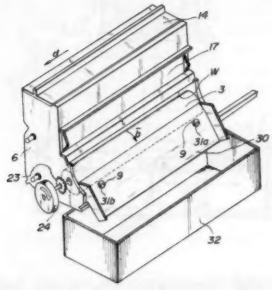
(F) electrode means operably associated with the container and operable at an electrical potential different from the electrical potential of the conductor,

whereby charged particles are transferred from the fluidized bed to the conductor in the region of the upper portion of the container adjacently above the open upper end of said hollow member.

4,271,784
APPARATUS FOR DISCHARGING A FATIGUED DEVELOPING AGENT IN A MAGNETIC BRUSH DEVELOPING DEVICE

Osamu Ishimoto, Hachioji; Hiroshi Tsuda, Mitaka, and Kiyoshi Miyashita, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 71,022
Int. Cl.³ G03G *15/09, 21/00*
U.S. Cl. 118—652 **13 Claims**



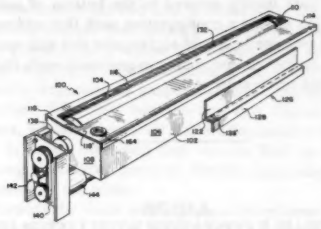
1. An apparatus for discharging a used and fatigued dry developing agent in a magnetic brush developing device for use in an electrophotographic copying machine which developing device comprises a housing forming a reservoir for the developing agent and having an opening formed therein at a position which is opposed to a charge retentive member, for retaining an electrostatic charge image to be developed; a sleeve formed of non-magnetic material arranged in the housing at a position whereby it is exposed to the charge retentive member through the opening and a magnet assembly arranged inside the sleeve; said sleeve and magnet assembly being rotatably arranged about an axis in a given direction, comprising: means for removably supporting the developing device along a direction of said axis from a first developing position in the copying machine at which the developing device develops the charge image on the charge retentive member, to a second discharging position out of the copying machine at which the developing device can be accessed; means for manually rotating the sleeve and magnet assembly together with each other, for transporting the developing agent attracted on the sleeve surface to the opening, when the developing device is in a second discharging position; and scraping means detachably securable to the housing at said opening, while the developing device is in said second discharging position, said scraping means having an edge in contact with the sleeve surface through the opening, so as to scrap the transported developing agent off the sleeve enabling discharge of the developing agent through the opening.

4,271,785
APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Samuel R. DiNallo, Sr., Framingham, and Leon K. Najarian, Milford, both of Mass., assignors to Coulter Systems Corporation, Beford, Mass.

Filed Mar. 27, 1980, Ser. No. 134,519
Int. Cl.³ G03G *15/10*
U.S. Cl. 118—661 **16 Claims**

1. A toning device for disposition at the toning station of an electrophotographic imaging apparatus wherein an electrophotographic member having a photoconductive coating portion on one surface thereof which carries a latent electrostatic image is translated therepast for development of said image, said toning device comprising a container of generally rectangular box-like configuration adapted to contain a liquid toner suspension therein, said container having opposite side and end walls, a bottom wall and a top wall, means defining an elongate longitudinal slot along the length of the top wall, toner feed roller means within said container along the length of the slot and extending partially therethrough, shaft means carrying said feed roller means and journal means at the opposite end walls for sealingly mounting said shaft means for rotation for rotating said feed roller means in contact with the toner suspension, collar means mounted on said shaft means interior of said container and adjacent the end walls of said container at

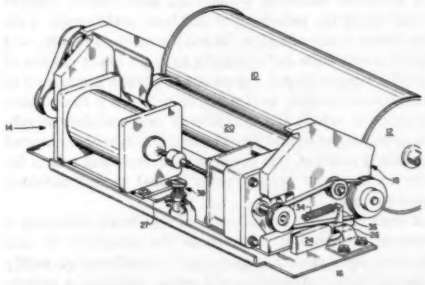


opposite ends of said feed roller means for free rotation independent of said feed roller means, said collar means having an outer diameter slightly greater than the diameter of said feed roller means and means for seating said container within said electrophotographic imaging apparatus at the toning station thereof with said feed roller means closely proximate said photoconductive surface of the electrophotographic member parallel thereto and said collar means engaged therewith along the edges thereof.

4,271,786
ELECTROPHOTOCOPIER DEVELOPER UNIT MOUNTING SYSTEM

Franklin J. Buckley, Bethel, and David W. Hubbard, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jun. 16, 1980, Ser. No. 159,904
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—661 **4 Claims**



1. A mounting system for a developer unit in an electrophotocopier having a photoreceptor mounted on a drum for assuring proper alignment and pressure between the developer unit and the photoreceptor, comprising:

a fixed platform having a rectangular slot located midway between the ends thereof, said slot having a length extending perpendicular to the axis of the photoreceptor drum;

a developer unit slidably mounted at either end on said fixed platform, said developer unit having a base plate with an aperture in alignment with said rectangular slot;

a pair of spacer wheels coaxial to and slightly larger in diameter than the applicator shell on the developer unit rotatably mounted on either end of the developer unit;

means for urging said spacer wheels against the photoreceptor drum; and

a locking and guiding device removably insertable in said slot in said fixed platform, said device including

a rotatable pin having a cap portion and a shank portion, said shank portion being reciprocably slidable in both said aperture and said slot,

a compression spring located beneath the cap portion and above the base plate and surrounding the upper part of the shank portion of said pin, and

a cam-lock fixedly secured to the bottom of said shank portion having a configuration such that said cam-lock may pass through said rectangular slot and upon rotation be locked into sliding engagement with the length of said rectangular slot.

4,271,787

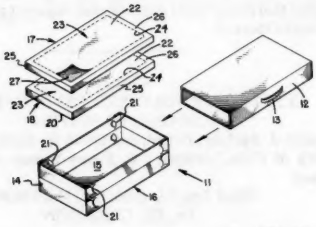
DISPOSABLE CONTAINER WITH LITTER FOR ANIMALS

Gary L. Wellman; Carl P. Wellman, and Naomi M. Wellman, all of 829 Orange St., Yuba City, Calif. 95991

Filed Nov. 19, 1979, Ser. No. 95,202

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **5 Claims**



1. A disposable container with litter for animals comprising:

a. a container including a base and substantially upright walls about the periphery of said base; said upright walls including a pair of end walls and a pair of side walls, said pairs of end walls and side walls having a lower portion of predetermined height and an upper portion articulated to said lower portion and movable between a first folded position in which the thickness of said container is substantially equal to said predetermined height and a second unfolded position, said upper portion including means for interlocking said upright walls in said second unfolded position; and,

b. at least two litter boxes, each of said boxes including a bottom, upstanding walls about the periphery of said bottom, and a cover connected to said walls and vertically spaced from said bottom, said cover including a removable portion, each of said boxes being substantially filled with animal litter material, said boxes being initially disposed in stacked relation within said container so that each of said boxes is opened, used, withdrawn from said container, and disposed of in consecutive fashion, the combined height of said litter boxes being substantially equal to said predetermined height so that said litter boxes are snugly confined by said upper portion of said upright walls in said first folded position thereof, said upright walls of said container being higher than the combined height of said litter boxes in said second unfolded position so as to prevent litter material from being scattered outside said container by an animal user.

4,271,788

PROCESS AND APPARATUS FOR ACCELERATING GROWTH RATE OF SALMONOIDS AND OTHER FISH AND THE LIKE

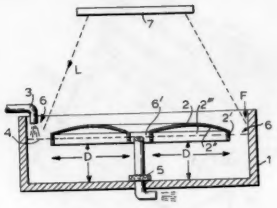
Albert H. Knowles, Inverness-shire, Scotland, assignor to Robert Harvey Rines, Concord, N.H., a part interest

Filed Aug. 10, 1979, Ser. No. 65,617

Claims priority, application United Kingdom, Jul. 17, 1979, 24914/79

Int. Cl.³ A01K *63/00*

U.S. Cl. 119—3 **28 Claims**



1. A process of accelerating fish growth rate, that comprises, densely populating a pond with fish, the pond comprising a volume of water contained within boundaries; continually passing water through the pond; providing in contact with the water an opaque cover shield that is positioned relative to adjacent boundaries of the pond so as to cover a substantial area of the pond, so as to block external light from entering that area, and so as to provide a region beneath the cover shield directly and laterally shielded from light; maintaining said region as a dark region in which the fish can rest in darkness; and illuminating a region of the pond beyond said dark region for enabling visual feeding by the fish at the illuminated region.

4,271,789

ENERGY CONVERSION SYSTEM

Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

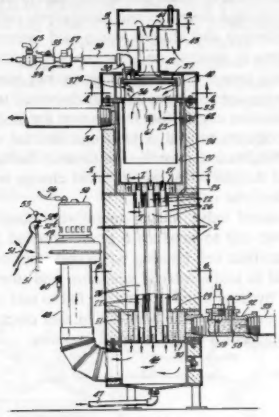
Continuation-in-part of Ser. No. 813,667, Jul. 7, 1977, Pat. No. 4,197,831, which is a continuation of Ser. No. 620,327, Oct. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270, Continuation of Ser. No. 794,044, May 5, 1977, abandoned, which is a division of Ser. No. 568,699, Apr. 16, 1975, abandoned, which is a division of Ser. No. 369,084, Jun. 11, 1973, abandoned. This application Jun. 7, 1979, Ser. No. 46,240

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—16 **34 Claims**

1. A water heater comprising a combustion chamber, a plurality of flue tubes each with its inlet end connected with the combustion chamber toward one side thereof, and each having an outlet end for discharge of combustion gases, the inlet end of each flue tube being at least as high as the outlet end, means for introducing fuel and air into the combustion chamber in a region remote from the connection of the flue tubes, a water tube surrounding each flue tube with a water inlet end adjacent the outlet end of the flue tube and with a water outlet end adjacent the connection of the inlet end of the flue tube with the combustion chamber, a header for receiving

flue gases and condensate from the discharge ends of the flue tubes and having a condensate drain at a level below the discharge ends of the flue tubes, and a discharge duct for the products of combustion connected with said header.

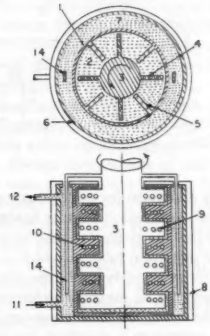


4,271,790

METHOD OF HEATING WATER USING WIND ENERGY AND APPARATUS THEREFOR

Nazeer Ahmed, and Myrna M. Ahmed, both of 17 Wedgewood Dr., Danbury, Conn. 06810

Filed Nov. 23, 1979, Ser. No. 96,894
Int. Cl.³ F22B *3/06*
U.S. Cl. 122—26 **6 Claims**



1. A method of heating water using wind energy consisting of:

(a) Attaching a shaft containing a first set of perforated radial arms to a windmill so that the shaft with its perforated radial arms rotates with the windmill;

(b) Locating said shaft in a stationary first vessel which has a second set of perforated radial arms projecting inwards from it such that the first and second set of radial arms are staggered along an axis parallel to the axis of the said shaft, with no physical contact between first and second set of perforated radial arms as said shaft and said first set of perforated radial arms rotate with the windmill;

(c) Locating a first fluid in said first vessel, the viscosity of said first fluid so chosen that it is higher than the viscosity of water at any temperature between the freezing point and boiling point of water;

(d) Placing a second vessel with a water inlet and a water outlet such that the second vessel surrounds said first vessel;

(e) Admitting water into said second vessel;

(f) Attaching radial arms with stirrer means to the rotating shaft so that as the shaft rotates the stirrer means stir the water;

(g) Utilizing wind energy to rotate said shaft with its first set of perforated radial arms thereby causing a relative motion between the first set of rotating perforated radial arms and the stationary second set of perforated radial arms, the relative motion forcing the first viscous fluid through the perforations in the two sets of radial arms, the motion of said first viscous fluid through each perforation resulting in a pressure drop across that perforation, the pressure drop resulting in heat generation in the first viscous fluid thereby increasing its temperature and resulting in a temperature differential between said first viscous fluid and water, which temperature differential causes a heat transfer to occur from said first viscous fluid to the water through said first container, thereby increasing the temperature of the water;

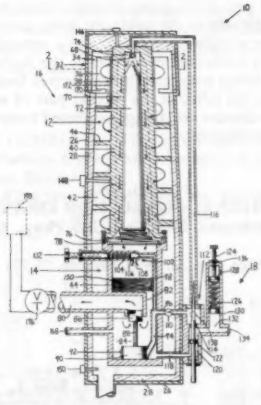
(h) Drawing the water with increased temperature from said second vessel.

4,271,791

RAPID RESPONSE STEAM GENERATOR II

Wellesley R. Kime, 8745 Appian Way, Los Angeles, Calif. 90046

Filed Jun. 21, 1979, Ser. No. 50,820
Int. Cl.³ F22B *27/00*
U.S. Cl. 122—39 **18 Claims**



18. A rapid response steam generator, having a heat transfer cylinder with liquid intake means and liquid passage means through the length thereof, means for combustion of fuel circumferentially around the heat transfer cylinder for heating the liquid and generating steam within the passage means, means for collecting steam from the passage means for discharging steam for usable steam pressure, further comprising:

a molecular air separator for separating air into its constituent parts, molecular oxygen for increasing the heat of combustion in the combustion chamber and molecular nitrogen for blowing pulverized solid fuel into the combustion chamber; and,

means for blowing pulverized fuel into the combustion chamber with the molecular nitrogen.

4,271,792
STEAM GENERATOR FOR GENERATING STEAM FROM FEEDWATER OF REDUCED QUALITY

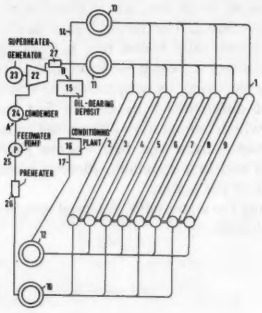
Eberhard Wittchow, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,878

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847340

Int. Cl.³ F22D *7/00*

U.S. Cl. 122—406 S **2 Claims**



1. Steam generator for generating steam from feedwater of lower quality, having heating surfaces formed of tubes welded to one another directly or through bridges, a plurality of the tubes being connected in parallel in respective groups at the feedwater and steam sides of the generator comprising a first feedwater circulatory system with water of lower quality, a second feedwater circulatory system with water of higher quality, a first part of the group of tubes connected in parallel at the feedwater side of the generator being connected in said first feedwater circulatory system, and a second part of the group of tubes connected in parallel at the feedwater side of the generator being connected in said second feedwater circulatory system, the tubes of the second part of said group of tubes at the feedwater side being distributed between the tubes of the first part thereof.

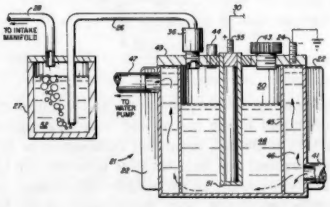
4,271,793
INTERNAL COMBUSTION ENGINE

Joseph M. Valdespino, 5023 Golf Club Pkwy., Orlando, Fla. 32808

Filed Aug. 31, 1979, Ser. No. 71,776

Int. Cl.³ C10H *5/00*

U.S. Cl. 123—3 **20 Claims**



1. An improvement to internal combustion engines comprising in combination:

an internal combustion engine having fuel feed means for feeding a fuel-air mixture to at least one combustion chamber;

an electrical generating and storage means for generating and storing electrical energy;

an electrolytic cell for generating hydrogen and oxygen therein and having a housing, an anode and a cathode and having an electrolyte in said housing;

electrical connecting means connecting said electrical generator and storage means to said electrolytic cell for generating hydrogen and oxygen when said internal combustion engine is running, and disconnecting said electrical connecting means when said engine is not running;

gas feed means connecting said electrolytic cell to said internal combustion engine fuel feed means for feeding hydrogen and oxygen to said at least one internal combustion engine combustion chamber with said fuel-air mixture being fed therein when an electrical charge is applied to said electrolytic cell; and

pressure control valve means operatively coupled to said electrolytic cell to produce a predetermined pressure in said electrolytic cell housing when said electrolytic cell is connected to said electrical generator and storage means, whereby hydrogen and oxygen are fed to said combustion chamber only when the pressure in said electrolytic cell housing exceeds a predetermined pressure.

4,271,794
FUEL DELIVERY APPARATUS

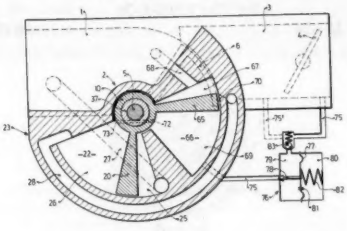
Heinrich Knapp, Leonberg; Hermann Eisele, and Werner Kammerer, both of Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 930,089

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2740001

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—454 **14 Claims**



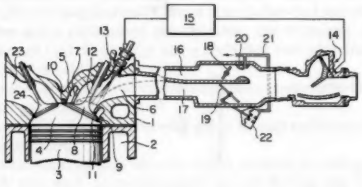
1. A fuel delivery apparatus for mixture-compressing, externally ignited internal combustion engines having an air induction tube and a fuel line, particularly those having a fuel injection point in the air induction tube, in which an air measuring element and an arbitrarily activatable throttle valve are arranged in seriatim and the air measuring element has a control body controlling the induction tube cross-sectional area, the attitude of which represents a standard for the induced air quantity and in accordance therewith the movable part of a valve positioned in the fuel line for the metering of a fuel quantity associated with the air quantity is adjusted, further characterized wherein a radial vane pivotably fixed in a work chamber and a damping vane pivotably fixed in a damping chamber are connected with said control body and the radial vane which separates the work chamber into plural chambers is acted upon on one side thereof by the upstream pressure and on the other side thereof by the downstream pressure of the control body in such a manner that a force contacts said radial vane which counters a return force and is capable of urging the control body in the direction of an enlargement of the controlled induction tube cross section; further wherein said damping vane separates said damping chamber into a pressure chamber and a throttle chamber, said pressure chamber being connected with atmospheric pressure.

4,271,795

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND WITH FUEL INJECTION SYSTEM TO DISCHARGE FUEL INTO SECONDARY INDUCTION SYSTEM

Yasuhiko Nakagawa, Kamakura; Yukihiro Etoh, Yokohama; Meroji Nakai, Yokosuka, and Ryoji Nakajima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 4, 1978, Ser. No. 966,373
Claims priority, application Japan, Dec. 19, 1977, 52/152553
Int. Cl.³ F02B *31/00*
U.S. Cl. 123—308 **2 Claims**



1. In an internal combustion engine including means defining a cylinder having a longitudinal axis and a piston slidably disposed in said cylinder to define a variable volume combustion chamber, a dual induction system comprising:

an air flow meter,

a primary induction passage leading from downstream of said air flow meter to a first valve controlled inlet port of said combustion chamber, said primary induction passage and said first inlet port being so constructed and arranged as to introduce the air flowing therethrough into said combustion chamber in a direction tangential with respect to the wall of said cylinder so that the air thereafter swirls around said axis of said cylinder,

a fixed venturi disposed at the upstream end of said primary induction passage,

a first throttle valve operatively disposed in said primary induction passage downstream of said venturi,

a secondary induction passage leading from downstream of said flow meter to a second valve controlled inlet port of said combustion chamber, said secondary induction passage and said second inlet port being so constructed and arranged as to introduce air flowing therethrough into said combustion chamber in a direction which impedes the swirling of the air from said primary induction passage around said axis,

a second throttle valve operatively disposed in said second induction passage,

a pressure differential responsive motor which is fluidly connected with said venturi and which is operatively connected with said second throttle valve for moving said second throttle valve in response to the degree of vacuum prevailing at said venturi,

an inlet valve which controls both said first and second inlet ports,

a fuel injector disposed in said secondary induction passage, said fuel injector being so positioned as to inject fuel toward a head of said inlet valve so that said fuel impinges on said valve head and thereafter disperses radially outwardly, and

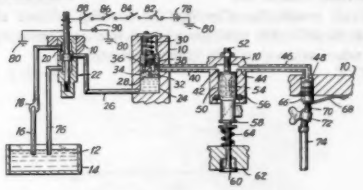
means for controlling said fuel injector in response to an output of said air flow meter and in synchronism with opening of said inlet valve.

4,271,796

PRESSURE RELIEF SYSTEM FOR ENGINE BRAKE

Kenneth H. Sickler, Simsbury; Donald J. McCarthy, Wethersfield, and Raymond N. Quenneville, Suffield, all of Conn., assignors to The Jacobs Manufacturing Company, Bloomfield, Conn.

Filed Jun. 11, 1979, Ser. No. 47,499
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—321 **11 Claims**



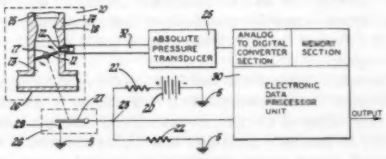
1. In an engine braking system of a gas compression relief type including an internal combustion engine having exhaust valve means and pushrod means, hydraulically actuated first piston means associated with said exhaust valve means to open said exhaust valve means at a predetermined time, second piston means actuated by said pushrod means and hydraulically interconnected with said first piston means, the improvement comprising a pressure relief system operable between a first high pressure condition and a second low pressure condition, said pressure relief system comprising a bistable ball valve located in the hydraulic system comprising said interconnected first and second piston means, said bi-stable ball valve having primary and secondary orifices and damping means associated with said ball valve to rapidly damp out vibrations of said ball valve as it moves from its closed position defining said high pressure condition to its open position defining said low pressure condition whereby the flow through said ball valve is maximized and the time required to attain the low pressure condition is minimized.

4,271,797

INTERNAL COMBUSTION ENGINE CONTROL SYSTEM

Gary P. McCarbery, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1979, Ser. No. 105,726
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—412 **6 Claims**



1. In an internal combustion engine control system of the type that employs electrical signal representations of engine manifold pressure and atmospheric pressure to effect engine control,

an engine intake passage through which air is supplied to said engine;

a valve located in said intake passage that is selectively adjustable between closed and maximum open positions for controlling the amount of air flow to said engine;

a port in said intake passage so positioned relative to said valve that said port is exposed to substantially atmospheric pressure when said valve is in said closed position and to engine manifold pressure when said valve is not in said closed position;

means for producing an electrical pressure valve indicating signal, said means including at least a single absolute pressure transducer of the type that produces an output electrical signal that is a function of absolute pressure value in operative communication with said port for sensing substantially atmospheric pressure when said valve is in said closed position and engine manifold pressure when said valve is not in said closed position;

memory means; and

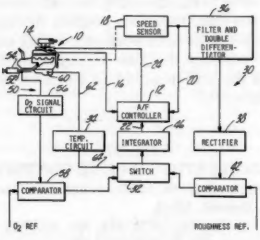
circuit means for effecting the loading of said electrical pressure valve indicating signal into said memory means when said valve is in said closed position.

4,271,798

ALTERNATE CLOSED LOOP CONTROL SYSTEM FOR AN AIR-FUEL RATIO CONTROLLER

William R. Seitz, Royal Oak, and Chun K. Leung, Farmington Hills, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 27, 1978, Ser. No. 955,728
Int. Cl.[3] F02D *5/00*
U.S. Cl. 123—419 **4 Claims**



1. A system for producing a control signal for an air-fuel ratio controller for an internal combustion engine comprising:

an oxygen sensor for generating a first signal indicative of the oxygen content of the exhaust gases emitted by the engine;

first means responsive to said first signal for producing a first control signal corresponding to a change in the air-fuel ratio required to maintain the air-fuel ratio provided by the air-fuel ratio controller near the stoichiometric value;

second sensor means sensing a mechanical output of the engine for generating a second signal having a value indicative of the air-fuel ratio being supplied to the engine;

second means responsive to said second signal for producing a second control signal corresponding to a change in the air-fuel ratio provided by said air-fuel ratio controller to maintain the air-fuel ratio at a predetermined value;

means for generating a third signal having a value indicative of the temperature of said oxygen sensor; and

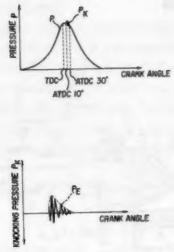
switching means responsive to said third signal for coupling said first means to said air-fuel ratio controller when said third signal is indicative of a temperature above a predetermined value and for coupling said second means to said air-fuel ratio controller when said third signal is indicative of a temperature below said predetermined value.

4,271,799

KNOCKING CONTROL DEVICE

Takayuki Kato, Aichi; Kazumasa Sumi; Hideo Arakawa, both of Nagoya; Toshimitsu Ito, Toyota, and Masakatsu Sanada, Susono, all of Japan, assignors to K.K. Toyota Chuo Kenkyusho, Nagoya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

Filed Apr. 30, 1979, Ser. No. 34,736
Claims priority, application Japan, Apr. 28, 1978, 53-51818
Int. Cl.[3] F02D *5/04*
U.S. Cl. 123—425 **32 Claims**



1. A knocking control device for an ignition circuit of an engine comprising:

a knocking detecting circuit for detecting, as an electrical signal, an amount of variation corresponding to an internal pressure variation within a cylinder of said engine due to a knocking of said engine,

an averaging circuit for converting said electrical signal from said knocking detecting circuit to a signal corresponding to a knocking energy,

a crank angle detecting circuit for detecting a rotation phase of said engine,

a comparison circuit for comparing said signal corresponding to said knocking energy from said averaging circuit with a reference value defining a predetermined knocking level to obtain a control signal for maintaining an engine knocking level in a predetermined range, and

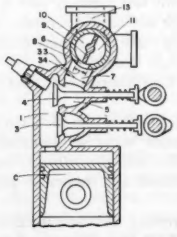
an ignition control circuit adapted to be connected to the ignition circuit, for controlling the ignition timing of the ignition circuit by said control signal from said comparison circuit.

4,271,800

APPARATUS FOR CHARGING AN INTERNAL COMBUSTION ENGINE

Pasquale Borracci, Via Benedetto da Foiano 1, Florence, Italy

Filed Jul. 11, 1979, Ser. No. 56,603
Claims priority, application Italy, Jul. 20, 1978, 9538 A/78
Int. Cl.[3] F02B *17/00*
U.S. Cl. 123—430 **4 Claims**



1. Apparatus for delivering a charge of relatively non-carbu-

reted and carbureted gases to the combustion chamber of an internal combustion engine, said chamber having a movable piston in association therewith, said piston defining during a phase of its movement an intake stroke for said chamber, said apparatus comprising:

a rotary valve having at least one port therethrough, said port, during rotation of said valve, communicating between a source of non-carbureted gases and a passageway to said combustion chamber and between a source of carbureted gases and said passageway, said rotary valve including:

a rotatable, hollow cylinder having a first port through the sidewall thereof which passes into communication with said combustion chamber during rotation of said cylinder;

a generally stationary diaphragm positioned within said cylinder, said diaphragm dividing the interior of said cylinder longitudinally into a non-carbureted gas chamber and a carbureted gas chamber, the rotational position of said diaphragm being such that one edge thereof overlies said passageway;

means for supplying non-carbureted gases to said non-carbureted gas chamber;

means for supplying carbureted gases to said carbureted gas chamber; and

means for rotating said valve in timed relation to said engine such that such communication occurs during the intake stroke of the piston associated with said combustion chamber.

4,271,801

INTERNAL COMBUSTION ENGINE WITH TWIN INTAKE PORTS FOR EACH CYLINDER

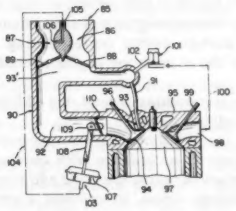
Yoshio Yamakawa, Toyota; Toshikazu Toyoda, Numazu, and Hidetaka Nohira, Mishima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 6, 1978, Ser. No. 949,238

Claims priority, application Japan, Oct. 12, 1977, 52/121551

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—432 **8 Claims**



1. An internal combustion engine comprising:

(a) a cylinder;

(b) a duplex carburetor having a pair of venturis, one of said venturis having significant air flow therethrough only at high engine speed and load;

(c) an intake manifold connected between said cylinder and said duplex carburetor, said manifold including a chamber located downstream of and communicating with said venturis, and a pair of passages, branched from said chamber and having a pair of intake ports, respectively, opening to said cylinder;

(d) a valve normally closing one of said passages; and

(e) control means energizable in response to a vacuum signal from said one of said venturis for actuating said valve to open said one of said passages only during operation of the engine at high speed of rotation under heavy load, whereby the flow from the venturis to the cylinder is restricted to the other of said passages except during operation of the engine at high speed of rotation under heavy load to enable strong swirls to be developed in the cylinder even at low intake flows.

4,271,802

SECONDARY INTAKE GAS CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

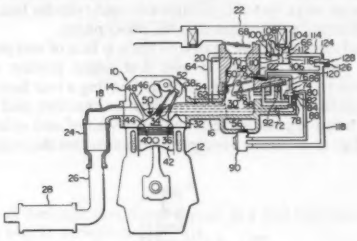
Kenji Hori, and Yuhiko Kiyota, both of Nagaokakyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,536

Claims priority, application Japan, Mar. 20, 1978, 53-32543

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—432 **8 Claims**



1. A secondary intake gas control system for a spark-ignition internal combustion engine having air-fuel mixture supply means having a throttle valve and a choke valve in a main intake passage of the engine, and a secondary intake gas supply means for injecting air or a lean air-fuel mixture into a combustion chamber in order to give a swirl and turbulence to an air-fuel mixture supplied into said combustion chamber through said air-fuel mixture supply means, said secondary intake gas supply means including an injection port opened to said combustion chamber, and secondary intake passage means communicated with said injection port through a valve which is opened at a suction stroke of the engine, said control system comprising air control valve means through which said secondary intake passage means is communicated with atmosphere upstream of the location of said choke valve in the main intake passage, said secondary intake passage means being also opened to the main intake passage downstream of the location of the choke valve, said air control valve means comprising a valve member, actuating means for actuating said valve member, means for sensing a temperature of the engine, and means for sensing a degree of opening of the throttle valve, said actuating means being operated by said means for sensing the temperature of the engine and said means for sensing the degree of opening of the throttle valve to open said valve member to communicate the secondary intake passage means with atmosphere when the degree of opening of the throttle valve is above a predetermined opening degree at a predetermined temperature range of the engine during warming-up thereof.

4,271,803

INTERNAL COMBUSTION ENGINE

Kiyoshi Nakanishi; Takeshi Okumura; Ryuichi Deguchi, all of Susono, and Toshio Tanahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 22, 1979, Ser. No. 41,397

Claims priority, application Japan, Jul. 20, 1978, 53-87673

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—432 **21 Claims**

1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a cylinder head having an inner wall mounted on said cylinder block;

a first raised portion having on its lower end a flat bottom

face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards;

a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face so as to create a first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston;

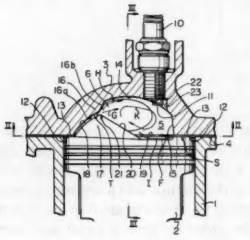
a combustion chamber defined by the inner wall of said cylinder head and the top face of said piston;

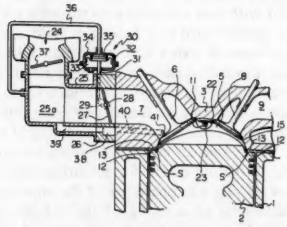
an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber;

an intake valve seat;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at





the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber;

a spark plug having a spark gap located in said combustion chamber;

an intake passage having an inlet;

an carburetor having a throttle valve arranged in the inlet of said intake passage;

secondary valve means arranged in said intake passage at a position downstream of said throttle valve, said secondary valve means being opened in accordance with a reduction in the level of vacuum produced in said intake passage; and

an auxillary intake passage having a cross-sectional area less than that of said intake passage, having an inlet which opens into said intake passage located between said throttle valve and said secondary valve means, and having an outlet directed to a valve gap formed between said intake valve and said intake valve seat when said intake valve is open.

4,271,804

METHOD AND APPARATUS FOR DETERMINING FUEL MIXTURE ADJUSTMENT VALUES FOR FUEL BURNING ENGINES

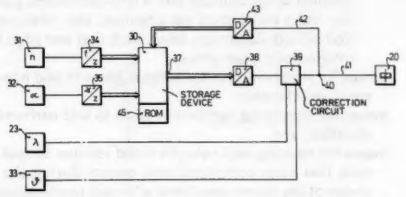
Valerio Bianchi, Hochdorf; Peter-Jürgen Schmidt, Schwieberdingen; Reinhard Latsch, Vaihingen, and Josef Wahl, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,533

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812442

Int. Cl.³ F02M *7/18*

U.S. Cl. 123—440 **13 Claims**



1. A method for determining an adjustment value for a fuel supply device in a fuel-burning engine having an operational setting according to its construction tolerances comprising:

providing a first storage device containing permanent adjustment values for said fuel supply device according to at least one engine operating condition signal;

providing a second storage device for receiving the permanent adjustment values from said first storage device;

transmitting the permanent adjustment values from the first storage device to said second storage device upon engine startup;

continually transmitting said at least one engine operating condition signal to said second storage device;

continually transmitting stored adjustment values from the second storage device corresponding to instantaneous values of the at least one engine operating condition signal;

continually transmitting at least one additional engine operating condition signal;

correcting the adjustment values transmitted from the second storage in accordance with corresponding instantaneous values of said at least one additional engine operating condition signal, to produce corrected adjustment values;

continually transmitting an engine λ value signal;

adjusting the corrected adjustment values by multiplying the corrected adjustment values by corresponding instantaneous values of the engine λ value signal to produce final adjustment values;

transmitting the final adjustment values to the fuel supply device and to the second storage device; and

exchanging the final adjustment values with corresponding stored adjustment values in the second storage device.

4,271,805

FUEL INJECTION PUMP

Masayoshi Kobayashi; Toru Sakuranaka, and Keiichi Yamada, all of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,916

Claims priority, application Japan, Dec. 29, 1977, 52-176250

Int. Cl.³ F02M *59/24*

U.S. Cl. 123—459 **15 Claims**

1. In a fuel injection pump for an internal combustion engine,

including: a housing; a barrel mounted within said housing; a plunger mounted within said barrel for axial and rotary motion therein; a pump working chamber defined by the housing, the barrel and the plunger; and outlet pressure lines for connecting said pump working chamber with associated injection nozzles;

the improvement which comprises:

a port formed within said plunger, one end of said port communicating with said pump working chamber and the other end of said port terminating in an outer periphery of said plunger;

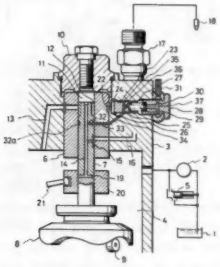
an annular groove formed in the outer periphery of said plunger and intersecting with said port;

a relief passage having one end thereof terminating in an inner peripheral wall of said barrel and the other end thereof communicating with a zone under a lower pressure, said one end of said relief passage being so arranged as to be closed by said outer periphery of said plunger or become opposite said annular groove of said plunger with a movement of said plunger;

a valve means provided with a restriction means and arranged for blocking said relief passage;

an actuating means arranged for actuating said valve means in response to a fuel supply pressure varying as a function of engine rotational speed;

said valve means comprising a bore formed within said pump housing and communicating on one side with said relief passage and on the other side with a zone under a



lower pressure; a piston slidably received within said bore, said piston having an annular groove formed in an outer periphery thereof, and a restriction passage having one end thereof radially opening in said annular groove and the other end thereof communicating with said lower pressure zone, said restriction passage of said piston comprising said restriction means of said valve means; and a spring arranged for urging said piston axially of said bore against an actuating force of said actuating means, wherein communication between said relief passage and said lower pressure zone is interrupted by displacement of said piston;

said annular groove of said plunger and said opposite end of said relief passage being placed in a relationship in width and position such that they register with each other at the beginning of each fuel delivery stroke of said plunger, in idling operation they are kept in such registered state throughout substantially the entire injection period during each delivery stroke of said plunger, and in middle and high speed ranges said opposite end of said relief passage is closed by said outer periphery of said plunger throughout the entire injection period during each delivery stroke of said plunger except at the beginning of said each delivery stroke to thereby obtain a generally sufficient injection pressure in the middle and high speed ranges; and

said actuating means being arranged to actuate said valve means to permanently keep said relief passage closed except in a predetermined low engine speed range.

4,271,806

DISTRIBUTION TYPE FUEL INJECTION PUMP

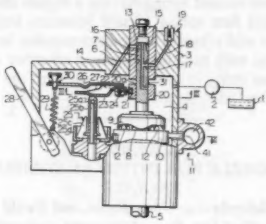
Nobuhiro Kaibara, Higashi-Matsuyama, and Masayoshi Kobayashi, Kawagoe, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,627

Claims priority, application Japan, Jun. 30, 1977, 52/77177; Jun. 30, 1977, 52/77178

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **8 Claims**



1. A fuel injection pump for use in a fuel injection combustion engine, comprising:

a housing having a fuel chamber therein;

a plunger movably mounted in said housing and forming a plunger chamber over a head of said plunger;

first cam means fixedly mounted on said plunger;

second cam means turnably mounted on said housing and cooperating with said first cam means so as to cause reciprocal motion of said plunger along the axis thereof during plunger rotation with respect to said cam means, said second cam means being capable of being positioned in one of a plurality of angular positions thereof;

fuel supply means for introducing fuel into said plunger at the suction stroke of said plunger;

a delivery port for feeding fuel to the engine from said plunger chamber at the delivery stroke of said plunger;

a leak port formed in said plunger and connected to said plunger chamber; a control sleeve slidably mounted on said plunger for normally closing said leak port and for connecting said leak port to said fuel chamber at the end of the delivery stroke to terminate the fuel injection;

a governor device actuating said control sleeve for controlling the quantity of fuel to be injected;

injection timing control means for controlling the angular position of said second cam means in response to the engine speed so as to displace said second cam means to advance the injection timing in response to an increase in engine speed, said injection timing control means comprising a first piston slidably fitted into a first cylinder and connected to said second cam means via a first rod, said first piston being urged by elasticity of a first spring to urge said second cam means towards injection timing retarding and said first piston being effected by hydraulic pressure of fuel, in response to the engine speed, introduced into a first pressure chamber to move said second cam means towards injection timing advancing against said elasticity of said spring, said first piston moving in accordance with the difference between said elasticity and said pressure in said pressure chamber, said first piston being provided with a fuel passage therethrough for communicating said first pressure chamber with said fuel chamber in said housing, said fuel passage being in communication with said fuel chamber through said housing; and

injection timing adjusting means for providing an adjusted movement of said second cam means toward a predetermined angular position to advance the injection timing at the engine start, said injection timing adjusting means comprising a pressure responsive member forming a part of the wall of said first pressure chamber of said injection

timing control means, a second rod fixedly connected to approximately the center portion of said pressure responsive member at one end thereof, the other end of said rod abutting against said first piston of said injection timing control means, and a second spring urging said rod toward said first piston, said injection timing adjusting means further including a pressure receiving area of said pressure responsive member facing said first pressure chamber, said area being larger than a pressure receiving area of said first piston also facing said first pressure chamber and further said second spring having a higher elasticity than that of said first spring in said injection timing control means and said pressure responsive member being in communication with said first pressure chamber on one side thereof and being in communication with the atmosphere on the other side thereof.

4,271,807
PUMP/NOZZLE FOR INTERNAL COMBUSTION ENGINES

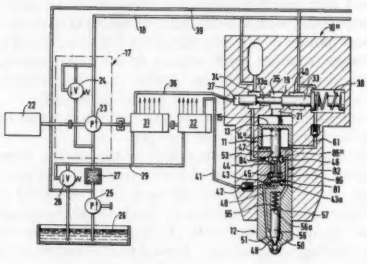
Heinz Links, Baiersbronn; Odon Kopse, and Ewald Eblen, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,542

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803049

Int. Cl.³ F02M *57/02, 59/34*

U.S. Cl. 123—506 **6 Claims**



1. In a pump/nozzle for internal combustion engines including a pump piston driven by means of a servo piston of larger diameter, said pump piston being guided in a fluid-tight manner within a cylinder bore which forms the pump work chamber, said pump piston blocking the connection from the pump work chamber to a pressure line attached in the vicinity of the wall of the cylinder bore and leading to an injection valve, said blocking taking place shortly before the end of the stroke of said pump piston, thereby terminating fuel delivery and being effected by a frontal control edge of said pump piston, whereupon, during its remaining stroke, said pump piston enters an end section of the pump work chamber serving as a filling chamber and is braked by fuel which is prevented from escaping from said filling chamber by a filling valve which is disposed in a filling line which terminates in the filling chamber and supplies the pump work chamber with the fuel which is to be injected, and having a low-pressure chamber to receive fuel from said filling chamber via a relief channel arranged within said pump piston which is opened to the pressure line at least substantially at the same time as the pressure line leading to the injection valve is closed from the pump work chamber, the improvement comprising:

throttle means, associated with said pump piston, for controlling the delayed escape of fuel from the filling chamber to a low-pressure chamber;

and wherein the relief channel is opened to the pressure line as controlled by the frontal control edge, which relief channel has a discharge point cut into the jacket surface of the pump piston in the vicinity of said frontal control edge, wherein a flow throttle defined by a throttle cross section which varies in area in accordance with the stroke and is located between an end section adjacent to said frontal control edge of said pump piston and said cylinder wall of the filling chamber so that fuel which escapes from said filling chamber via said relief channel to the chamber of lower pressure is capable of being forced out, further wherein said relief channel is first capable of being opened after said pressure line is closed.

4,271,808
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

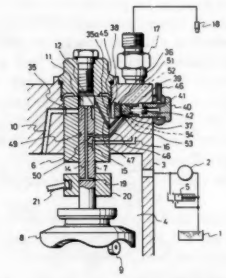
Masayoshi Kobayashi; Toru Sakuranaka, and Keiichi Yamada, all of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 1,285

Claims priority, application Japan, Jan. 20, 1978, 53-4240; Feb. 3, 1978, 53-10563

Int. Cl.³ F02M *37/04*

U.S. Cl. 123—506 **9 Claims**



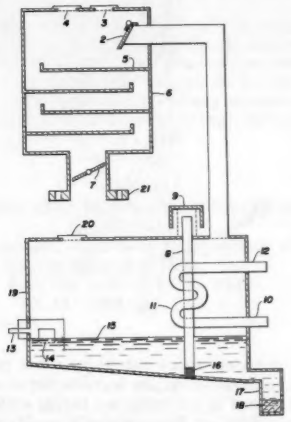
1. A fuel injection pump for an internal combustion engine, which comprises: a housing; a suction chamber defined within said housing; a barrel mounted within said housing; a plunger mounted within said barrel for axial and rotary motion therein; a pump working chamber defined by the housing, the barrel and the plunger; outlet pressure lines for connecting said pump working chamber with associated injection nozzles; a first relief channel including a port having one end thereof communicating with said pump working chamber and the other end terminating in an outer periphery of said plunger and a communication channel having one end thereof terminating in an inner periphery of said barrel and the other end arranged for communication with a zone under a lower pressure; a second relief channel allowing fuel to flow therethrough at a restricted rate and having one end thereof opening in said pump working chamber and the other end arranged for communication with a zone under a lower pressure; a valve means provided across said first and second relief channels; and a valve actuating means arranged in communication with a pressure source supplying a pressure varying with engine r.p.m.; wherein said port and communication channel of said first relief channel are so disposed as to communicate with each other at the beginning of fuel delivery stroke of said plunger, and said valve means is arranged to be actuated by said valve actuating means responsive to a varying pressure from said pressure source for blocking both said first and second relief channels during starting of the engine, opening both of them in a predetermined low engine speed range, and opening solely said first relief channel in a higher engine speed.

4,271,809

VAPORATOR

Theodore G. Moore, Sr., deceased, late of Yoncalla, Oreg.; by Theodore G. Moore, Jr., administrator, 1519 1st Ave., Rockford, Ill. 61108, and by Betty L. Moore, administrator, 509 NW. Franklin, Bend, Oreg. 97701

Filed Jun. 27, 1978, Ser. No. 876,060
Int. Cl.³ F02M 31/00
U.S. Cl. 123—522 **1 Claim**



1. An internal combustion engine vaporator system comprising:

a vaporator tank which provides an enclosed chamber for containing a liquid fuel,

means for supplying liquid fuel to said chamber;

float means for maintaining a specified level of liquid fuel in said vaporator tank;

an air inlet tube extending below the level of the liquid fuel;

a porous zinc catalyst device positioned completely below the level of the liquid fuel and attached to said tube;

said catalytic device being provided to separate the light gasoline ends from the heavy hydrocarbons, the lighter ends vaporizing quickly into the air bubbling up through the fuel from the air inlet tube, and the non-volatile parts collecting in a particle reservoir means on the bottom of the vaporator tank,

said reservoir being removable for cleaning,

a heating coil wrapped around the tube,

said heating coils being heated by engine coolant tapped from the engine cooling system, said heating coils enhancing the evaporation process;

an auxilliary air inlet provided in said vaporator tank and including a valve therein for controlling additional air as needed;

an air-fuel mixing chamber means;

air-fuel conduit means for connecting said vaporator tank to said air-fuel mixing chamber means;

a backfire valve device;

said air-fuel conduit means including said backfire valve device to prevent liquid fuel from being expelled from the vaporator tank in the event of a backfire;

an additional air inlet/outlet device provided for the air-fuel mixing chamber means in order to add more air and allow release of backfire pressure,

a system of baffle plates positioned in the air-fuel mixing chamber to further mix the air and gas vapor; and

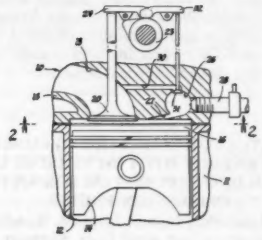
a conduit connected to and extending between the air/fuel mixing chamber and the intake manifold of the engine to allow the fuel/air mixture to flow to the combustion chambers.

4,271,810

DIVIDED CHAMBER ENGINE WITH PRECHAMBER EXHAUST RECIRCULATION

David R. Lancaster, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1980, Ser. No. 111,211
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 **2 Claims**



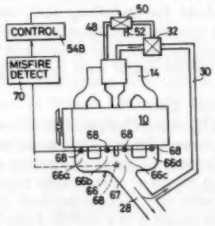
1. In a divided chamber internal combustion engine having an auxiliary combustion chamber capable of being charged with a combustible fuel-air mixture and connected by a restricted passage with a main combustion chamber having intake and exhaust means and capable of being charged with a relatively leaner charge than in the auxiliary chamber, the improvement comprising recirculation means connecting the auxiliary chamber with the intake means and operative during the operating cycle to recirculate at least a portion of combustion products from the auxiliary chamber to the intake means prior to completion of the exhaust of combustion products from the main chamber to thereby limit discharge in the exhaust of residual combustion products from the auxiliary combustion chamber.

4,271,811

FEEDBACK CONTROL OF EXHAUST GAS RECIRCULATION BASED ON COMBUSTION CONDITION

Suzuo Suzuki, Yokosuka; Yoshitaka Hata, Fujisawa, and Akihiro Ohnishi, Koshigaya, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 825,130, Aug. 16, 1977, Pat. No. 4,186,701.
This application Sep. 21, 1979, Ser. No. 77,536
Claims priority, application Japan, Aug. 23, 1976, 51-100434
Int. Cl.³ F02B 47/08
U.S. Cl. 123—571 **4 Claims**



1. A feedback control system for controlling the volume of exhaust gas recirculated from an exhaust passage of an internal combustion engine to the induction passage of the engine through an exhaust recirculation passage, the system comprising:

a flow control valve to vary the volume flow rate of the exhaust gas in the exhaust recirculation passage;

a sensor means for sensing the condition of combustion in a

combustion chamber of the engine and producing a first electrical signal representing the sensed combustion condition, said sensor means comprising a spark-gap disposed in the exhaust passage to detect the frequency of misfire in said combustion chamber by the frequency of a spark-discharge across said spark-gap;

a control means for producing a second electrical signal based on said first electrical signals, said second electrical signal indicating a decrease in the volume flow rate of the exhaust gas in the recirculation passage when said first electrical signal implies a decrease in the frequency of said spark-discharge in said combustion chamber; and

an actuator means for operating said control valve in response to said second electrical signal.

4,271,812

APPARATUS FOR MAINTAINING CONSTANT IGNITION ENERGY WITH INCREASING ENGINE SPEEDS IN AN IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

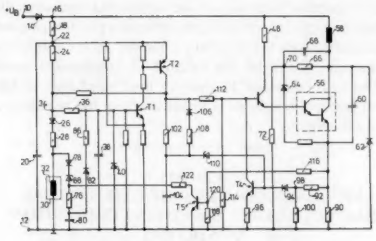
Bernd Bodig, Leinfelden; Helmut Schmied, Remshalden; Gerd Höhne, Ludwigsburg, and Adolf Fritz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,772

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833343

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—609 **7 Claims**



1. In an ignition system in an internal combustion engine having means **(30)** for generating a speed-dependent signal having an amplitude varying as a predetermined function of engine speed, an ignition coil having a primary winding **(58)**, interrupter switch means **(56)** connected in series with said primary winding, and trigger circuit means connected to said speed-dependent signal generating means and said interrupter switch means and having a predetermined switch-in and switch out threshold for switching said interrupter switch means alternately into the conductive and blocked state, apparatus for increasing the ratio of conductive to blocked time of said interrupter switch means with increasing engine speed, comprising

storage means **(80, 140)**;

circuit means **(78, 40)** including at least one unidirectional conducting element for connecting said storage means to said speed-dependent signal generating means and said trigger circuit means so that storage means is charged in accordance with said speed-dependent signal while said trigger circuit means is in a switched-out state and so that the so-created charge on said storage means shifts said thresholds of said trigger circuit means in a direction increasing the time said interrupter switch means is in said conductive state;

and means **(88, 138)** interconnected between said storage means and said speed-dependent signal generating means for delaying said charging of said storage means until said speed of said engine has reached a predetermined minimum speed.

4,271,813

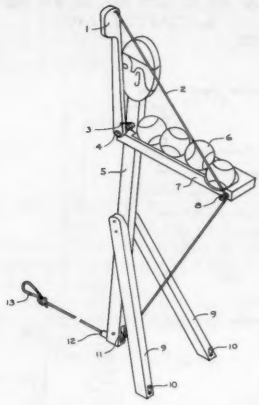
BATTER ACTUATED BASEBALL PITCHING MACHINE

David Rowe, 204 Maple St., East Haven, Conn. 06512

Filed May 11, 1977, Ser. No. 796,041

Int. Cl.³ F41B *3/02*

U.S. Cl. 124—7 **3 Claims**



1. A ball throwing device comprising a one piece frame extending in an upward direction; legs attached to said frame; a ball rack attached to said frame and having a ball outlet; a shaft projecting from said frame; an arm mounted on said shaft for pivotal movement relative to said frame; a spring mounted on said shaft and biassing said arm in one direction; a cord, one end of which is attached to said arm for pivoting said arm in a direction opposite to said one direction to a position proximate said ball outlet for engagement with a ball at said outlet; means for guiding said cord; and a stop fixed to said cord for engagement with said guiding means to limit pivoting of said opposite direction.

4,271,814

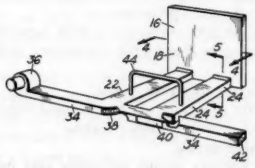
HEAT EXTRACTING APPARATUS FOR FIREPLACES

Paul M. Lister, 1803 General Anderson Ave., Vancouver, Wash. 98661

Continuation-in-part of Ser. No. 792,410, Apr. 29, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 914,056

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **2 Claims**



1. A heat extracting apparatus for fireplaces of the type having front doors, comprising

(a) an upstanding heating chamber having front and rear walls and enclosing top, bottom and side walls and arranged to be disposed adjacent a wall of a fireplace for exposure to the fire,

(b) inlet and outlet duct means connected into said heating chamber adjacent the bottom and adjacent respective opposite sides,

(c) said inlet and outlet duct means being arranged to extend

substantially horizontally along the floor of a fireplace and support firewood thereon,

(d) a front cross duct connected to and communicating with said outlet duct means,

(e) an outlet opening in said cross duct on the opposite side of the connection of said duct with said outlet duct means,

(f) said opening being substantially aligned with said outlet duct means and in substantially the same horizontal plane,

(g) an extension on said cross duct extending laterally beyond its connection with said outlet duct means,

(h) said extension communicating with said outlet duct means and having an open end,

(i) said outlet opening being larger in cross sectional area than the cross sectional area of said outlet duct means and also being offset laterally towards said open end relative to said outlet duct means whereby the forced outlet of heated air through said outlet opening provides a Venturi action which draws in room air through said open end to increase air circulation in a room.

4,271,815

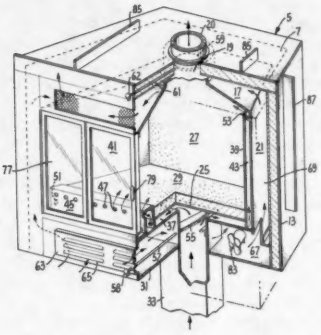
PREFABRICATED FIREPLACE FOR PERMANENT INSTALLATION

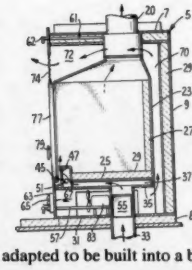
William R. Johnson, Santa Cruz, Calif., assignor to Chinook Manufacturing Co., Santa Cruz, Calif.

Filed Nov. 8, 1979, Ser. No. 92,486

Int. Cl.[3] **F24B** *7/00;* **F24C** *1/14*

U.S. Cl. 126—121 **2 Claims**





1. A fireplace adapted to be built into a building, comprising in combination:

a. a firebox, said firebox including a combustion chamber, a double wall bottom, double wall sides, a back, and a conical top, said double wall sides being planar and having one end thereof connected to a lower wall of said double wall bottom and having an inner wall of said double wall sides spaced from but closely adjacent said conical top, said sides having fluid passages defined therein to fluidly connect said double wall sides to said double wall bottom, said walls and said bottom forming combustion air fluid passages which are located on the inside of said combustion chamber and which are fluidly connected with each other and with said combustion chamber via the top of said combustion chamber, refractory material located adjacent said combustion chamber sides and bottom,

b. an outer shell having a front wall, double wall sides, a double wall top and a bottom and surrounding said firebox on at least the bottom, back, sides and top of said firebox, said shell including refractory material in said double wall sides and said double wall top, and being spaced from said firebox at said bottom, back, top and sides to define bottom, side and top room air flow passages, said flow passages being fluidly connected together,

c. transparent doors on the front wall of said firebox, said doors being substantially airtight when in a closed condition,

d. a main combustion air intake conduit located near said firebox back and fluidly connected to said firebox double wall bottom so that combustion air from said intake travels a substantial distance in contact with said firebox bottom,

e. a damper in said main combustion air intake conduit,

f. a combustion air manifold fluidly connected to said firebox double wall bottom fluid passage to receive air therefrom, said combustion air manifold being U-shaped and opening toward said bottom lower wall and being located closely adjacent but spaced from said transparent doors, said manifold supporting that refractory material located on said firebox bottom,

g. air flow directing means on said air manifold located adjacent the bottom of said doors to direct combustion air from said manifold into said combustion chamber and onto the inside of said doors for providing combustion air for said combustion chamber and for cooling said doors,

h. room air intake openings on the bottom of said outer shell front, said intake openings being fluidly connected to said shell bottom flow passage,

i. room air exhaust openings in the top of said outer shell front and fluidly connected to said bottom flow passage so that room air flows beneath, beside, behind and on top of said firebox when passing from said intake openings to said exhaust openings,

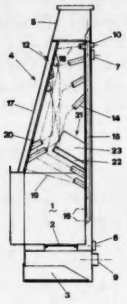
j. said shell flow passages being in direct thermal contact with said firebox fluid passages and said firebox fluid passages being in direct thermal contact with said combustion chamber so that heat from said combustion chamber is transferred to the air flowing in said fluid and said flow passages,

k. a major portion of combustion air flowing from said intake conduit following said firebox flow passage to the front of the firebox, then exhausting from said air manifold flow directing means to flow in contact with said transparent doors and then the remainder of said combustion air flowing in said firebox wall fluid passages then into the top of said firebox combustion chamber to produce secondary combustion near the top of said combustion chamber thereby assuring complete combustion without combustion products being discharged through an opening at the top of the firebox,

l. said air flowing over said transparent doors keeping said doors cool and clean, and

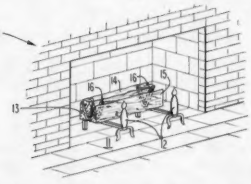
m. room air flowing in said flow passages from said intake openings to said exhaust openings contacting said firebox top and serving to heat a room in which said fireplace is located.

4,271,816
FIREPLACE
Alberto Carocci, Rome, Italy, assignor to Racla Co. Limited, St. Helier, Great Britain
Filed Jun. 7, 1978, Ser. No. 913,379
Claims priority, application Italy, Jul. 5, 1977, 50121 A/77
Int. Cl.³ F24B *9/04, 1/18*
U.S. Cl. 126—132 **6 Claims**



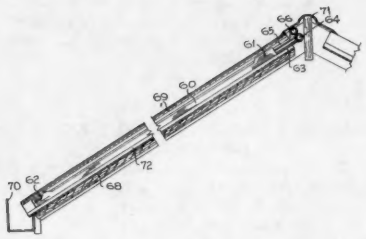
1. A combination fireplace and boiler, the combination comprising a solid fuel burning furnace and a hood, at least the interior of said hood defining a boiler through which combustion gases flow during passages from said solid fuel burning furnace to a fireplace flue, said boiler including a plurality of heat exchange tubes which rise generally vertically inside said hood in a direction substantially parallel with the path of rising combustion gases so as not to encumber draft, said tubes defining substantially vertically extending heat exchange surfaces, and said boiler being provided with compartment means for containing water to be heated and means for its connection to a hot water system, wherein said heat exchange tubes extend from said furnace to substantially the top of said hood and are substantially surrounded by said compartment means for containing water to be heated, wherein said substantially vertical heat exchange surfaces allow effective passage of water, and wherein walls of said hood and of said furnace are double walls defining intercommunicating water jackets wherein water to be heated is to be contained and circulated.

4,271,817
FIRE ARRAY AND APPARATUS
E. Arthur Thompson, P.O. Box 456, Penllyn, Pa. 19422
Filed Apr. 6, 1979, Ser. No. 27,620
Int. Cl.³ F23B *13/00*
U.S. Cl. 126—298 **1 Claim**



1. An array for a log fire comprising andiron means adapted to support a plurality of logs in a generally horizontal position, a pair of logs supported on said andiron means in a parallel opposing relationship, implement means consisting of a fire resistant rigid structure adapted to provide a V-shaped supporting surface thereon, said implement means being supported by said pair of logs and acting to space said pair of logs apart, and a further log supported within the interior angle of the V-shaped supporting surface of the implement means, said array providing a generally V-shaped draft space between the three logs thereof.

4,271,818
SOLAR HEATER ROOF-PANEL CONSTRUCTION
Peter J. Hastwell, 133 Mills Ter., North Adelaide, South Australia, Australia 5006
Filed Jun. 16, 1978, Ser. No. 916,364
Claims priority, application Australia, Jun. 20, 1977, 0509/77
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **15 Claims**



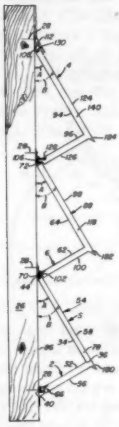
1. A sloped roofing structure comprising:
(a) a plurality of roofing panels each defined by a floor and at least two upwardly extending marginal edges having upstanding ridges, the ridges of adjacent panels are fitted together and said panels are sloped to form a drain surface to shed water from a roof so formed,
(b) a plurality of independent transparent or translucent solar collector plates having flow channels therethrough for passage of a medium to be heated by solar radiation, said solar collector plates extending up the slope of said roofing structure and being disposed within said roofing panels spaced over the floor to form a clearance therebetween, whereby, solar energy which passes through the channels of the said collector plates is returned at least in part from the floor of said roofing panels to said independent solar collector plates, and
(c) transparent shielding panels, said transparent shielding panels pass solar radiation disposed over the said solar collector panels, and are sealed to and supported by said roofing panels over said collector plates, whereby said collector plates are disposed in cavities formed between said roofing panels and said shielding panels, said shielding panels form the drain surface above said cavities, and whereby said roofing panels discharge leakage from said solar collector plates through said clearance.

14. A sloped roofing structure in combination with a ridge cap and gutter, further including:
(a) a plurality of roofing panels having ridges running from said ridge cap to said gutter to thereby form cavities down which water is guided to the said gutter,
(b) thermal insulation on the underside of the said roofing panels,
(c) a plurality of independent solar collector plates having fluid flow passages therethrough disposed in at least some of the said cavities, and
(d) a transparent shielding panel which passes solar radiation closing the top of each of the said cavities in which an independent solar collector plate is disposed, whereby said roofing panels shed water to the said gutter excepting where said solar collector plates are positioned at which locality said shielding panels shed the water to said gutter outside of the said cavities, but wherein water leakage from the said solar collector plate or shielding panels is shed to the said gutter by the said roofing panels.

4,271,819
SOLAR ENERGY APPARATUS

Daniel L. Farrell, 328 Plumer Ave., Pittsburgh, Pa. 15202

Filed Mar. 19, 1979, Ser. No. 21,998
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—417 22 Claims



1. Apparatus for collecting radiant solar energy and forming a panel assembly comprising

substrate means for securing solar panels thereto,

an elongated translucent generally V-shaped starter panel traverse to and secured to said substrate means,

upper and lower portions of said starter panel secured to said substrate means with the apex of said panel being disposed outwardly of said substrate means,

an elongated translucent generally W-shaped main panel secured to said starter panel and having a lower generally V-shaped portion of generally complementary shape with respect to said starter panel,

said lower generally V-shaped portion of said main panel overlapping and being generally spaced outwardly from said starter panel,

end closure means cooperating with said starter panel and said lower portion of said main panel to define a first elongated closed air space,

said main panel having an upper generally V-shaped portion,

an additional translucent panel secured to said main panel and having a generally V-shaped portion disposed in overlapping generally spaced outward relationship with respect to said upper portion of said main panel,

end closure means cooperating with said main panel upper portion and said additional panel portion to define a second elongated closed air space, and

energy receiving means disposed inwardly of the panel assembly, whereby said main panel serves as the outer wall of said first closed air space and the inner wall of said second closed air space and sun's rays impinging upon said panel assembly will pass therethrough to said energy receiving means.

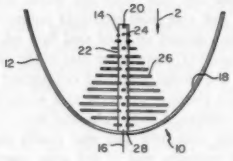
4,271,820
SOLAR HEAT STRUCTURE

Danforth Holley, 521 Lake Shore Rd., Grosse Pointe Shores, Mich. 48236

Filed May 16, 1979, Ser. No. 39,682
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—417 7 Claims

1. A diffuser for a solar collector said diffuser having an axis and comprising a plurality of elongated, narrow reflecting fingers and means for supporting the reflecting fingers axially of the diffuser with the reflecting fingers in spaced apart locations angularly and axially of the diffuser, said reflecting fingers defining the general shape of a Christmas tree and having outer tips generally defining a line diverging toward the bottom of the Christmas tree at an angle of between 30° and 60° with respect to the axis of the diffuser.

4. Solar heat structure comprising a concave solar heat collector having an axis of generation and a reflecting diffuser

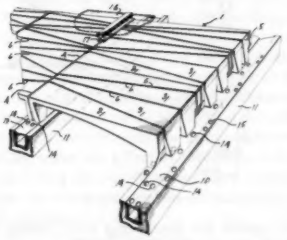


positioned axially of and operably associated with the collector constructed of reflecting material in the general shape of a Christmas tree, said diffuser diverging inwardly toward the collector from the outer end of the diffuser at an angle of between 30° and 60° with respect to the axis of the collector and being constructed of a central tube having transverse openings extending therethrough and metal foil strips extending through the transverse openings in the tube.

4,271,821
SOLAR ENERGY COLLECTOR

Colin C. Kerr, Box 275, Hawkesbury, Ontario, Canada K6A 2R9

Filed Aug. 8, 1980, Ser. No. 176,532
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—417 4 Claims



1. A solar energy collector comprising: a panel including a top face and a plurality of solar energy collecting fluid channel units; said top face being absorbent to solar energy and each of said solar energy collecting fluid channel units having a fluid channel with an upstream end and a downstream end, having opposite lateral sides laterally spaced apart across said solar energy absorbent top face, having a solar energy absorbent top extending between the corresponding opposite lateral sides, having a width between said lateral sides decreasing from the corresponding upstream end toward the downstream end, and laterally immediately adjoining and adjacent another of the solar energy collector fluid channel units along one of the opposite lateral sides of each other.

4. A solar energy collector comprising: a panel including a top face and a plurality of solar energy collecting fluid channel units; said top face being absorbent to solar energy and each of said solar energy collecting fluid channel units having a fluid channel with an upstream end and a downstream end, having opposite lateral sides laterally spaced apart across said solar energy absorbent top face, having a solar energy absorbent top extending between the corresponding opposite lateral sides, having a width between said lateral sides decreasing from the

corresponding upstream end toward the downstream end, and laterally adjoining another of the solar energy collector fluid channel units along one of the opposite lateral sides of each other, said plurality of solar energy collecting fluid channel units including a first and a second sets of channel units, the channel units of the first set taper in opposite direction relative to the channel units of the second set, each laterally tapering solar energy collecting fluid channel unit defining a wider inlet end, a narrower outlet end, and a bottom progressively diverging relative to the top face from the wider inlet end to the narrower outlet end, one inlet manifold connected to the upstream end of the channel units of said first set, another inlet manifold connected to the upstream end of the channel units of said second set, one outlet manifold connected to the downstream end of the channel units of said second set, another outlet manifold connected to the channel units of said first set, and said one inlet manifold and one outlet manifold being positioned at the opposite end of the solar energy collecting fluid channel units relative to said another inlet manifold and another outlet manifold.

4,271,822

CONVERSION OF AVAILABLE ENERGY

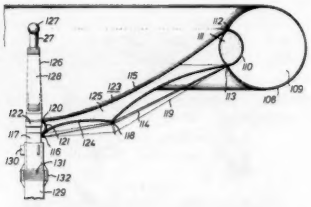
Reinhart Radebold, Quastenhornweg 14a, 1000 Berlin 22, Fed. Rep. of Germany

Division of Ser. No. 545,133, Jan. 29, 1975, Pat. No. 4,127,453. This application Oct. 13, 1978, Ser. No. 951,180

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2405134

Int. Cl.[3] **F24J** *3/02;* **H01Q** *15/20;* **G02B** *5/10*

U.S. Cl. 126—426 **12 Claims**



1. In a system for converting solar energy into different forms of energy, comprising:

a tubular, elongated housing, containing means for receiving and converting solar energy into a different form of energy;

a curved reflector of rotational symmetry, being directly exposed to solar radiation, the housing being disposed along the axis of the reflector and traversing same, so that solar energy can be focussed onto said one end of the housing;

a gas-filled custioning means for the curved reflector and being under relatively low pressure to obtain a concave contour for said reflector by external pressure acting upon the cushioning means;

means including additional pressurized chamber means serving as a support structure and acting at least in parts along a periphery of the cushioning means, without covering the reflector, to stabilize and peripherally expand the cushioning means and the reflector, and to provide the system as a whole with buoyancy for floating aboveground; and

a tube traversing the reflector, and being provided for supporting the reflector, the housing being inserted in said tube at its other end.

4,271,823

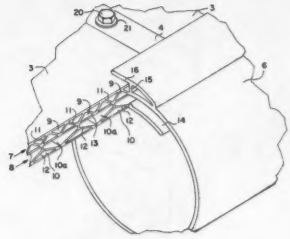
UNITARY SOLAR COLLECTOR PANEL

Robert A. Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa.

Continuation-in-part of Ser. No. 645,648, Dec. 31, 1975, Pat. No. 4,114,597. This application Aug. 3, 1978, Ser. No. 930,798

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—445 **40 Claims**



1. In a unitary, coextruded solar collector panel of the type having a first heat insulation region, divided into a plurality of first channels by a plurality of first ribs extending from the top of the heat insulation region to the bottom thereof, and a second, heat absorbing region, divided into a plurality of second channels by a plurality of second ribs extending from the top of the heat absorbing region to the bottom thereof, wherein the second region is adapted to absorb heat produced by solar radiation impinging thereupon, and the first region is adapted to insulate the second region to prevent the heat absorbed by the second region from being lost to the external elements, an improved collector panel which comprises:

a heat insulating region having at least as many first channels as their are second channels in the heat absorbing region, whereby convection currents which occur within the first channels are reduced, thereby reducing the heat losses so created; and

wherein the second ribs extend along substantially the entire length of the heat absorbing region and are obliquely oriented to separate the second channels into two groups of polygonal channels that intermesh for enhancing heat transfer, the ends of said second ribs lying in substantially the same plane.

4,271,824

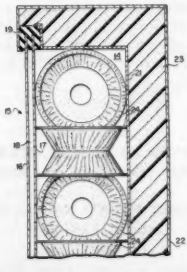
SOLAR HEATING APPARATUS

Charles R. Decker, III, Warsaw, Ill., assignor to Impac Inc., Keokuk, Iowa

Filed Jun. 10, 1977, Ser. No. 805,332

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—449 **9 Claims**



1. An energy transfer unit for a solar heater comprising

a. a pair of similar, open top metal foil pans, each pan having

a flat bottom wall and an outwardly flaring, conical side wall, and the walls of each pan being covered by a black, energy-absorbing coating; and

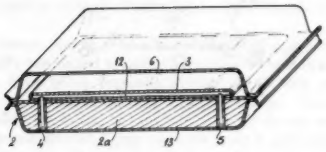
b. means connecting the pans to each other with their bottom walls in abutment.

4,271,825

SOLAR ENERGY COLLECTOR

Alain L. C. Schwob, Meyzieu; Bruno J. Busschaert, Lyons, and Claude A. M. Ivorra, Decines, all of France, assignors to Phenol Engineering S.a.r.l., Villeurbanne, France

Filed Jun. 11, 1979, Ser. No. 47,784
Claims priority, application France, Jun. 9, 1978, 78 17860
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **10 Claims**



1. In a solar energy collector having a carrying structure of thermally insulating material in the shape of a rectangular plane panel, an absorber supported by said structure, connecting pipes going through said structure for connection to a liquid utilization installation, and a transparent cover in the shape of a first shell defining an outside wall and positioned over said structure and housing said absorber, the improvement comprising a second shell of suitable plastic material defining an outer wall and a sheet of thermally insulating, heat-resistant material, wherein said carrying structure of thermally insulating material is made up of a phenol foam plate sandwiched between said second shell of suitable plastic material and said sheet of thermally insulating, heat-resistant material, said second shell and said first shell constituting the cover of the collector and each being provided with a respective peripheral flange, said pipes extending through said sheet of thermally insulating, heat-resistant material, said carrying structure and said second shell, said thermally insulating, heat-resistant sheet being provided with a peripheral extension positoned between said flanges of said shells, including means for fastening said first shell to said second shell along their said peripheral flanges as a single joint and means for supporting said absorber free of contact with said outside walls.

4,271,826

DEVICE FOR COLLECTING SOLAR ENERGY

Georges Duchene, Saint Bonnet Le Chateau, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Division of Ser. No. 819,563, Jul. 27, 1977, Pat. No. 4,175,542. This application Jul. 31, 1979, Ser. No. 62,473
Claims priority, application France, Jul. 30, 1976, 76 23454
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **5 Claims**

1. A device for collecting solar energy and heating a liquid therewith comprising:

a heat insulating substantially flat under support which has a downward slope from an upper end to a lower end thereof;

a mat of intermingled fibres extending longitudinally from said upper end to said lower end of said support and transversely of said support and constituting an absorbent body for the solar energy and also constituting guide means, by the effect of capillarity and gravity, for a downward free flow of said liquid therethrough;

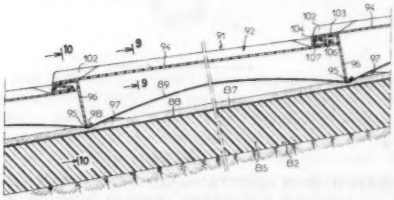
a fluidtight envelope of thin plastics material sheathing said mat and defining a lower substantially flat film bearing on said support and a translucent and flexible upper film which has a developed area larger than the area of the mat;

means adjacent said upper end of the support for supplying said liquid directly into the envelope and in direct contact with the mat in a substantially evenly distributed manner transversely of said mat;

means adjacent said lower end of the support for collecting said liquid which has flowed through the mat;

an upper roofing creating a glass house effect and comprising upper panel means which are substantially parallel to said support and spaced from the sheathed mat, and two edge wall portions upwardly extending from said support;

bearing means which depend from the panel means and extend transversely of the support and bear against the upper film so as to hold the panel means spaced away from the upper film, said bearing means exerting such bearing



force on the upper film and mat as to create small retentions of said liquid between the upper film and mat upstream of said bearing means whereby to improve distribution of said liquid transversely of the support and defining closed parts of said envelope arranged in succession from adjacent said upper end to adjacent said lower end of the support so that the upper film is free to rise between successive bearing means under the effect of expansion of vapours from said liquid within the envelope, said force exerted by said bearing means being such that said retentions of liquid are substantially just sufficient to improve said distribution of said liquid so that, in combination with a rate of flow determined by said means for collecting said liquid, said liquid merely wets the mat and flows therethrough solely under the effect of capillarity and gravity without ever filling the envelope and the pressure of said liquid within the envelope remains substantially equal to atmospheric pressure.

4,271,827

METHOD FOR PREVENTION OF GASTRO ESOPHAGEAL REFLUX

Jean P. Angelchik, 1728 W. Glendale Ave., Suite 401, Phoenix, Ariz. 85021

Filed Sep. 13, 1979, Ser. No. 75,270
Int. Cl.³ A61B *19/00;* **A61F** *1/00*
U.S. Cl. 128—1 R **1 Claim**

1. A method for preventing gastro esophageal reflux when

the gastro esophageal junction is positioned above the diaphragm, said method comprising:

(a) positioning a generally C-shaped cushion prosthesis around the distal esophagus, the inside diameter of said prosthesis generally corresponding to the normal outside diameter of the distal esophagus, said C-shaped member being deformable to permit adjustment of the spacing of the free ends thereof at a selected distance;

(b) adjusting said free ends of said prosthesis at a spacing to permit normal expansion of the esophagus during swallowing; and

(c) fixing said free ends of said prosthesis in said adjusted position to maintain said C-shaped cushion prosthesis in operative position around the distal esophagus generally adjacent to the gastric fundus when the gastro esophageal junction is positioned above said diaphragm and to maintain said adjusted spacing of said free ends, said prosthesis being positioned above said diaphragm free of any sutures interconnecting said prosthesis with the human body.

4,271,828

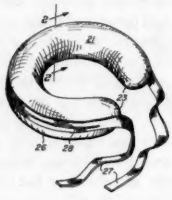
METHOD FOR MAINTAINING THE REDUCTION OF A SLIDING ESOPHAGEAL HIATAL HERNIA

Jean P. Angelchik, 1728 W. Glendale Ave., Suite 401, Phoenix, Ariz. 85021

Filed Sep. 13, 1979, Ser. No. 75,271

Int. Cl.[3] A61B *19/00*; A61F *1/00*

U.S. Cl. 128—1 R **1 Claim**



1. A method for maintaining the intra-abdominal reduction of a sliding esophageal hiatal hernia whereby extension of the gastric fundus into the thoracic cavity through an enlarged esophageal hiatal is prevented, said method comprising:

(a) positioning a generally C-shaped cushion prosthesis around the distal esophagus, the inside diameter of said prosthesis generally corresponding to the normal outside diameter of the distal esophagus and the outside diameter thereof being larger than said enlarged esophageal hiatus, said C-shaped member being deformable to permit adjustment of the spacing of the free ends thereof at a selected distance and having a generally constant cross-sectional area along the entire length thereof;

(b) adjusting said free ends of said prosthesis at a spacing to permit normal expansion of the esophagus during swallowing; and

(c) fixing said free ends of said prosthesis in said adjusted position to maintain said C-shaped cushion prosthesis in operative position around the distal esophagus between the gastric fundus and the diaphragm and to maintain said adjusted spacing of said free ends, said prosthesis being maintained in said operative position free of any sutures interconnecting said prosthesis with an organ of the human body.

4,271,829

ENDOSCOPE WITH DISTANCE MEASURING DEVICE

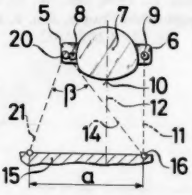
Helmut Heckele, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlengen, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,452

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818760

Int. Cl.[3] A61B *1/06*

U.S. Cl. 128—6 **1 Claim**

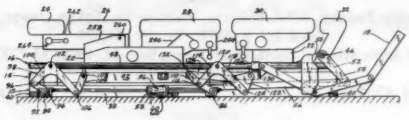


1. An endoscope equipped with an optical system including an objective lens defining a field of view of said endoscope and incorporating a device for measuring the distance between a subject and the objective lens of the optical system of the endoscope and selected lengths along the surface of a subject, said device comprising means for providing first, second and third visible light rays adjacent said objective lens, said rays being such that when projected into the field of view of the endoscope and onto a subject within the viewing range of the endoscope each ray will form a spot of light on the surface of the subject visible through said objective lens and of a diameter which is a small fraction of the portion of the surface of the subject which is within the field of view, first, second, and a third discrete reflector means for deflecting said first, second and third light rays, respectively, into the field of view of said endoscope, said first and second reflector means being spaced from one another at the distal end of said endoscope next to said objective lens of said optical system, said first reflector means deflecting said first ray into a fixed and approximately parallel position with respect to the viewing axis of said objective lens, means for moving said second reflector means such that said second ray may be moved within a plane which includes said first ray from a position parallel to the viewing axis of said objective lens to a position wherein said second ray intersects said first ray at a point within the viewing range of said endoscope, a first scale operatively associated with said means for moving said second reflector means for indicating the angle of said second ray with respect to a position parallel to the viewing axis of said objective lens, means for moving said third reflector means such that said third ray may be moved within a plane which includes said first ray from a position wherein said third ray intersects said first ray at a point within the viewing range of said endoscope towards a position wherein said third ray is parallel to the viewing axis of said objective lens, a second scale operatively associated with said means for moving said third reflector means, said second scale being based on a zero angle position defined by the position of said third ray when the surface of a subject is being viewed within the viewing range of said endoscope and said first and third rays intersect one another in the plane of the surface, said second scale indicating the distance along the surface of a subject being viewed between the spot on the surface caused by said first ray and the spot on the surface caused by said third ray.

4,271,830
CHIROPRACTIC TABLE

Derryl E. Moon, Fairmount, N. Dak. 58030

Division of Ser. No. 927,961, Jul. 26, 1978, Pat. No. 4,230,100.
This application Oct. 5, 1979, Ser. No. 82,120
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—73 7 Claims



1. A chiropractic table comprising:

an elongated pedestal frame, an elongated intermediate frame, and an elongated table frame, each having opposite ends;

a first linkage mechanism comprising a plurality of links pivotally connected to one another, one of said first mechanism links being pivotally connected to said pedestal frame and another of said first mechanism links being pivotally connected to said intermediate frame, said first linkage mechanism being movable from a collapsed position wherein said intermediate frame is parallel and adjacent said pedestal frame to a raised position wherein said intermediate frame is parallel to and spaced above said pedestal frame;

hinge means interconnecting one end of said table frame to one end of said intermediate frame for swinging movement therebetween about a horizontal axis transverse to the longitudinal centerline of said intermediate and table frames;

second linkage mechanism pivotally interconnecting said table frame with one of said intermediate and pedestal frames for causing said table frame to pivot about said horizontal axis provided by said hinge means, said second linkage mechanism comprising a lever arm fixed to said table frame, a tilt member movably mounted to said pedestal frame for longitudinal movement thereon, and a tilt link interconnecting said lever arm and said tilt member;

a lift member movably mounted to said pedestal frame for longitudinal movement thereon, said lift member being operatively connected to said first linkage mechanism for causing movement thereof and consequent lifting of said table frame in response to longitudinal movement of said lift member;

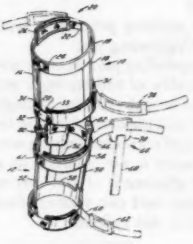
a master member movably mounted to said pedestal frame for longitudinal movement thereon, said master member being movable in a first direction to engage and move said tilt member so as to cause tilting of said table frame about said horizontal axis and said master member being movable in the opposite direction to engage and move said lift member to cause lifting of said table frame to said lifted position.

4,271,831
KNEE BRACE

Daniel T. Deibert, 813 St. Paul St. West, Montreal, Quebec, Canada

Filed Mar. 12, 1979, Ser. No. 19,342
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—80 C 18 Claims

1. In a knee brace having an upper section adapted to seat on the thigh of a wearer and a lower section adapted to seat on the lower leg portion, with a pivot means pivotally securing the upper and lower sections together the improvement wherein said lower section includes, immediately below the point of pivoting, and immediately below the knee joint of the leg of the wearer, a rigid bridge bar means adapted to partially encircle the anterior of the lower leg, flexible drawing means associated with said rigid means and adapted to encircle the posterior of the lower leg in the same region as the rigid bridge bar means, such that the drawing means is also immediately below the knee joint of the wearer, said drawing means being adjustable and adapted to draw the tibia of the lower leg forward proximate to and spaced from said rigid means, said upper section comprising drift control means having an adjustable length with respect to said upper section and encircling the anterior of the thigh immediately above the knee joint of the

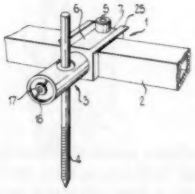


wearer, said drift control means being adapted to draw the lower portion of the thigh posteriorly for controlling the drift of the brace, said drift control means cooperating with said bridge bar means to aid in protecting posterior cruciate ligaments by at least forcing the tibia into alignment with the femur, and additional means on said upper section located above said drift control means for attaching the brace to the leg of a user.

4,271,832
POST-FRACTURE STABILITY OF LIMBS

Mervyn Evans, Kidlington, and John D. Harris, Abingdon, both of England, assignors to National Research Development Corporation, London, England

Filed Jul. 20, 1979, Ser. No. 59,201
Claims priority, application United Kingdom, Jul. 20, 1978, 30575/78
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—92 A 6 Claims



1. A splint for immobilizing a fractured bone comprising:

a rigid bar;

at least four pin clamps slidably mounted on said bar and fixable thereto;

at least four pins, each corresponding to a different one of said at least four pin clamps, each pin being capable of being lockably mounted in a different corresponding one of said at least four pin clamps and capable of engaging a part of the fractured bone;

each of said at least four pin clamps including a hollowing cylindrical portion having a cylindrical wall formed with two diametrically opposed openings, said two openings having diameters greater than the diameter of said corresponding pin, said corresponding pin extending through said two openings when lockably mounted;

each of said at least four pin clamps being structurally identical and further including:

two washers slidably fit on said corresponding pin inside said

cylinder, each washer being positioned adjacent to and having an external diameter greater than the diameter of said openings in said cylinder;

a plastic tubular spacer slidably fit on said corresponding pin between said two washers so as to hold each of said two washers against a corresponding one of said two openings;

a plurality of ball bearings contained in the space remaining in said cylinder when said corresponding pin, said two washers and said plastic spacer are disposed in said cylinder; and

means for applying pressure to said ball bearings to clamp said corresponding pin;

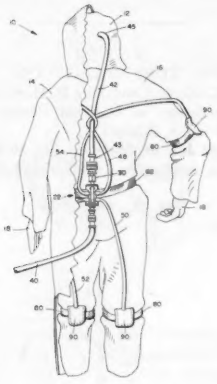
said corresponding pin, when in position to be clamped by said plurality of ball bearings, extends through said two openings in said cylinder, through said two washers and through said plastic spacer; said two washers being moveable by said corresponding pin when said means for applying pressure is not applied, to allow limited universal angular adjustment of said corresponding pin relative to said clamp; said two washers retain said plurality of ball bearings in said cylinder.

4,271,833

VENTILATING SYSTEM FOR PROTECTIVE CLOTHING

Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Filed Jun. 25, 1979, Ser. No. 51,615
Int. Cl.[3] A62B *17/00*
U.S. Cl. 128—201.29 **5 Claims**



1. In a ventilating system for use with protective body clothing of the type including an outer covering for the limbs of a user's body and a head protective enclosure, said ventilating system including a source of pressurized air, a manifold having an air inlet, a first air outlet connectable to said head protective enclosure and a plurality of second air outlets,

a plurality of flexible conduits each connectable at one end to a different one of said plurality of second air outlets, the other end of each of said conduits being adapted for mounting on a different one of said limbs of said user's body interior of said outer covering; the improvement wherein:

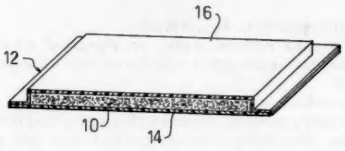
said air inlet and said first air outlet of said manifold have effective diameters which are substantially equal to each other and said plurality of second air outlets each have an effective diameter less than said effective diameters of said air inlet and first air outlet of said manifold whereby pressurized air within a limited predetermined range of air volume per unit time is delivered from said first air outlet when said air inlet is connected to a source of pressurized air having a pressure within a given predetermined pressure range regardless of the connection of said flexible conduits to said second air outlets.

4,271,834

DISPOSABLE PORTABLE MASK FOR EMERGENCY USE

Yoshio Tanaka, 2-7-6, Shibuya, Shibuya-ku, Tokyo, Japan 150

Filed Jul. 9, 1979, Ser. No. 56,039
Claims priority, application Japan, Sep. 11, 1978, 53-123721
Int. Cl.[3] A62B *7/10*
U.S. Cl. 128—205.27 **6 Claims**



1. An improved disposable portable mask for use in the presence of toxic gases in emergency situations comprising,

facemask means comprising a blank piece of sponge means of size and shape for covering a user's mouth and nostrils,

an aqueous solution capable of adsorbing acidic toxic gases impregnating the sponge means for adsorption of toxic gases breathed therethrough by the user, and

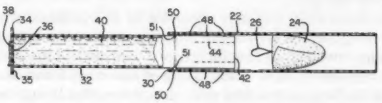
a fluid-tight container for storage of the aqueous solution-impregnated sponge means to maintain the same in moist condition.

4,271,835

FLUID-EXPANSIBLE CONTRACEPTIVE TAMPON AND APPLICATOR

Shepard Conn, Metuchen, N.J., and Arnold Kushner, Queens, N.Y., assignors to KCDP Corporation, New York, N.Y.

Filed May 17, 1978, Ser. No. 906,984
Int. Cl.[3] A61F *13/20*
U.S. Cl. 128—270 **23 Claims**



1. An apparatus for intravaginally expelling an activated tampon member from said apparatus comprising:

a first member defining a receptacle receiving and storing therein said tampon member in a quiescent unactivated state, said tampon member being activated by a fluid, such fluid being a spermicide;

a second member defining a reservoir storing said fluid therein separate from and out of contact with said tampon member;

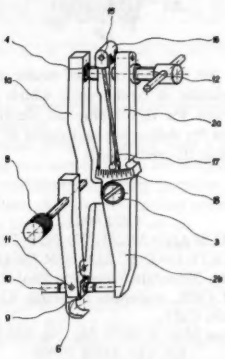
manually-activatable means for releasing said fluid upon command from the reservoir in said second member to activate the tampon member with said fluid while the tampon member is retained in said first member prior to intravaginal insertion; and

means, including the structural cooperation of said first member and said second member for intravaginally expelling said tampon member in its activated state from said applicator into a vagina.

4,271,836
APPLIANCE FOR CORRECTION OF SPINAL CURVATURES

Kazimierz Bacal, Zielona Gora, and Lech Wierusz, Swiebodzin, both of Poland, assignors to Wyzsza Szkola Inzynierska Im. Jurija Gagarina, Zielona Gora, Poland

Continuation of Ser. No. 809,047, Jun. 22, 1977, abandoned. This application May 8, 1979, Ser. No. 37,123
Claims priority, application Poland, Jun. 28, 1976, 190797
Int. Cl.³ A61B *17/00*; A61F *5/00*
U.S. Cl. 128—303 R **3 Claims**



1. An improved appliance for correction of spinal curvatures in the course of placing a surgical strut in a patient's body comprising, a first elongated arm having a first end portion and a second end portion, said second end portion of said first arm comprising means for releasably securing said first arm to a vertebral bone hook, a second elongated arm having a first end portion and a second end portion, said first arm being pivotally connected to said second arm at a point on said first arm intermediate said first and second end portions of said first arm to a point on said second arm intermediate said first and second end portions of said second arm, said pivotal connection being such that when said arms are pivoted with respect to one another, the movement of both of said arms is parallel to a single plane, said pivotal connection further being such that when said first portions of said first and and second arms are moved away from one another, said second portions of said first and second arms move towards one another, said second end portion of said second arm including a recessed portion adapted to receive the end of a surgical strut and shaped to prevent movement of the strut through, along the length of and to the sides of the second arm, said recessed portion being positioned such that it faces and is aligned with said securing means of said second end portion of said first arm, and screw adjustment means provided on said first end portion of said second arm, cooperating with said first end portion of said first arm for urging said first end portions apart from one another.

4,271,837
ELECTROSURGICAL APPARATUS

Martin Schuler, Münich, Fed. Rep. of Germany, assignor to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer, Tutflingen, Fed. Rep. of Germany

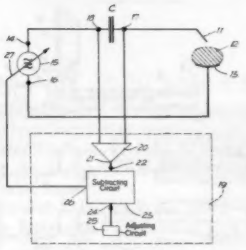
Filed Jan. 16, 1979, Ser. No. 3,929
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1978, 2801833
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.14 **9 Claims**

1. Electrosurgical apparatus for operating on an operating area of a tissue of a patient with high frequency electrical energy so that a d-c voltage is produced by rectification of the high frequency electrical energy in the operating area which rectified voltage is used to maintain an optimal temperature therein, comprising:

surgical electrode means for operating on the operating area,

first connecting means for connecting the patient to a point of reference potential,

means for generating high frequency voltage between said electrode means and said point of reference potential, and

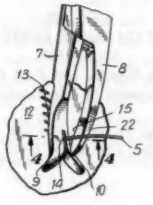


control means, responsive to said d-c voltage produced in the operating area and to a predetermined nominal d-c voltage for varying the high frequency voltage generated by said generating means to maintain said surgical electrode means at a desired temperature.

4,271,838
SUTURE CUTTER

Jeffrey I. Lasner, Yonkers, and Francisco H. Aleixo, Tarrytown, both of N.Y., assignors to Laschal Instruments Corp., North Tarrytown, N.Y.

Continuation-in-part of Ser. No. 893,582, Apr. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,388, Jan. 26, 1978, abandoned. This application Sep. 26, 1978, Ser. No. 945,809
Int. Cl.³ A61B *17/32*; B25F *3/00*; B26B *1/00*
U.S. Cl. 128—318 **18 Claims**



1. A suture cutter comprising:

an elongated member and an elongated blade, said blade having a knife edge for shearing a suture and a back remote from said edge,

said member having a depth and comprising an arm, an element, and a slot therebetween, said slot having a portion adapted to receive a suture but being too small to permit a knot in the suture to pass therethrough, and

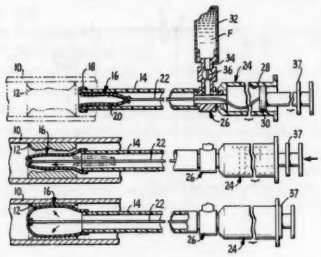
means connecting said member and said blade for relative movement therebetween in a direction substantially perpendicular to said elongated member and blade, said means enabling suture-shearing contact between said member and said blade such that said blade is relatively movable across said slot for cutting the suture so as to leave a stub on the side of the suture away from the tissue in which the suture is tied substantially equal in length to the depth of said member.

4,271,839

DILATION CATHETER METHOD AND APPARATUS

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, and Albert K. Chin, Stanford, Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jul. 25, 1979, Ser. No. 60,408
Int. Cl.[3] A61M *29/02*
U.S. Cl. 128—344 14 Claims



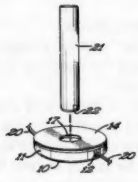
1. Apparatus for dilating a partially occluded section of a blood vessel, said apparatus comprising: an elongated flexible generally inelastic catheter having an outside diameter less than the internal diameter of the nonoccluded vessel; balloon means inverted within the catheter, said balloon means having a mouth peripherally sealed to the distal end of the catheter and being evertable out of the catheter in response to the exertion of fluid pressure within the catheter for substantially anisotropic expansion out of the catheter and through the occluded section of the vessel in advance of substantial lateral expansion and, upon eversion out of the catheter, being laterally expansible in response to the continued exertion of fluid pressure internally of the catheter to an outside diameter equal to or greater than the internal diameter of the vessel; and means to selectively impart internal pressure to the catheter.

4,271,840

RESERVOIR SYSTEM FOR A BODY IMPLANTABLE MEMBER

Gary A. Lattin, Coon Rapids, and Paul D. Sorenson, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 17, 1979, Ser. No. 76,401
Int. Cl.[3] A61N *1/00*
U.S. Cl. 128—1 R 19 Claims



1. A container system for a flexible, elongated, body implantable member of the type which is adapted to provide communication between separated body sites which comprises body means having a cavity for accepting a portion of such member therein and tool means insertable within said cavity and engageable with a member portion therein for coiling such member within said cavity on rotation of said tool means.

4,271,841

ELECTRO-OCULAR STIMULATION SYSTEM

Harry G. Friedman, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 31, 1980, Ser. No. 117,061
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 R 12 Claims

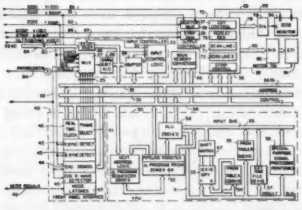
1. A system for the treatment of ocular misalignment by electrical stimulation of ocular recti which comprises body implantable means for developing an electrical stimulation signal and means for delivering said signal to an ocular rectus without restricting its contraction.

4,271,842

APPARATUS AND METHOD FOR PROVIDING MULTIPLE ULTRASONIC SECTOR IMAGE DISPLAYS

Donald F. Specht, Mountain View, and Paul R. Goldberg, Palo Alto, both of Calif., assignors to Smith Kline Instruments, Inc., Sunnyvale, Calif.

Filed Mar. 3, 1978, Ser. No. 883,171
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—661 15 Claims



1. Apparatus for providing multiple cardiac sector image displays comprising:

input controller means connected to receive input ultrasonic echo data representing cardiac sector images of a patient occurring during one or more cardiac cycles for digitizing in real time selected ones of said images thereby representing said images in a digital format,

front panel interface means for specifying said selected ones of said images occurring during one of said cardiac cycles,

storage means for storing in real time the digitized data,

microprocessor means for controlling in real time the digitizing and storing of said input data and for enhancing said digital images, said microprocessor means including memory means for storing a predetermined program of instructions, means responsive to a first portion of said stored program for digitizing and storing said input data, means responsive to a second portion of said stored program for enhancing said digital images, and means responsive to a third portion of said stored program for converting said enhanced data into a format corresponding to an analog format,

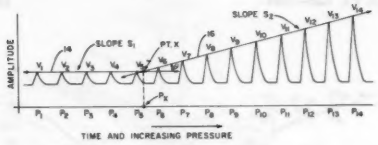
output controller means connected to receive the converted enhanced data for converting said enhanced data to an analog format for display, and

analog strip chart recorder means connected to receive the enhanced data in said analog format for displaying said multiple sector images thereby representing a cardiac image profile.

4,271,843
METHOD AND APPARATUS FOR DIASTOLIC PRESSURE MEASUREMENT

George J. Flynn, 16 Rolling La., Medfield, Mass. 02052

Filed Oct. 10, 1978, Ser. No. 949,674
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—681 22 Claims



1. A method for measuring diastolic pressure of a subject comprising the steps of

A. sensing arterial pressure signals with a pressure transducer applied non-intrusively to the subject's body,

B. applying arterially-constricting pressure to the artery being sensed and changing the applied pressure value over a range of at least sub-diastolic values,

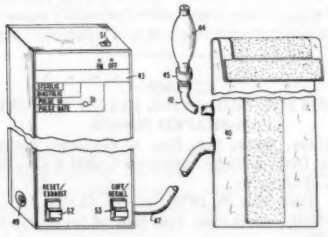
C. determining the minimum sub-diastolic value of applied pressure at which the rate of change of the portion of sensed signal corresponding to left ventricle ejection undergoes a progressive change in response to monodirectionally-changing applied pressure, and

D. producing a value indicative of diastolic pressure for the subject in response to said determined value of sub-diastolic applied pressure for that subject.

4,271,844
METHOD AND APPARATUS FOR PERFORMING NON-INVASIVE BLOOD PRESSURE AND PULSE RATE MEASUREMENTS

Michael E. Croslin, Forest Hills Gardens, N.Y., assignor to Medtek Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 499, Jan. 2, 1979, and a continuation-in-part of Ser. No. 774,970, Mar. 7, 1977. This application Aug. 6, 1979, Ser. No. 64,194
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—681 39 Claims



1. A method for determining systolic pressure as the occluding pressure existing in the cuff of a blood pressure measuring instrument bleeds down; said instrument including means for allowing air in said cuff to bleed out, and means for periodically sampling the instantaneous cuff pressure; comprising the steps of:

(a) utilizing successive samples taken for detecting the presence of a predetermined number of successive blood pressure pulses and the amplitude of each,

(b) registering the occluding pressure in said cuff at the onset of each blood pressure pulse,

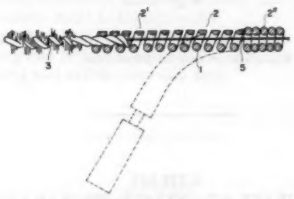
(c) comparing the detected sequence of the relative amplitudes of said predetermined number of blood pressure pulses with a plurality of known valid sequences to determine if the detected sequence is valid, and

(d) if the detected sequence is valid, determining the systolic pressure to be the registered occluding pressure at the onset of a predetermined one of said blood pressure pulses.

4,271,845
DEVICE FOR BENDING A MEDICAL INSTRUMENT INSERTED INTO THE BODY CAVITY

Kiyoshi Chikashige, Tsurugashima, and Nagashige Takahashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 54,115
Claims priority, application Japan, Jul. 1, 1978, 53-80039
Int. Cl.[3] A61B 10/00
U.S. Cl. 128—756 6 Claims



1. A device for bending a medical instrument inserted into the body cavity, comprising: a flexible cylindrical coil formed by winding an elastic thin wire and having a longitudinal axis, said flexible cylindrical coil having a coarsely wound portion at one end portion thereof, said coarsely wound portion having a first side and a second side which is diametrically opposite to said first side, said second side having a cut-out portion having a substantially flat profile substantially parallel to said longitudinal axis to thereby provide said first side with a greater torsional strength than said second side; and a pulling string fastened to said coarsely wound portion of said flexible cylindrical coil, whereby when said pulling string is operated, the turns of said flexible cylindrical coil are brought closer to each other on said first side of said coarsely wound portion greater in torsional strength than said second side to thereby bend said one end portion of said flexible cylindrical coil towards said first side of said coarsely wound portion.

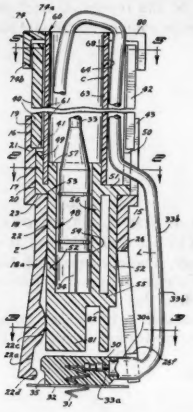
4,271,846
LEAD INSTALLATION TOOL

Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetoka, Minn.

Filed Apr. 23, 1979, Ser. No. 32,661
Int. Cl.[3] A61N 1/04
U.S. Cl. 128—785 39 Claims

1. A body tissue lead installation tool for clampingly holding the head of a lead for conducting electrical impulses to body tissue, comprising an electrode holder assembly having means operable between a clamping position for clampingly engaging an electrode head and a position to release the clamped head,

the clamping means having a central axis, and means mounted by the clamping means in a substantially fixed axial position on



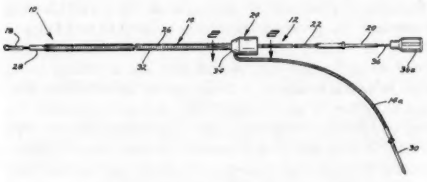
the clamping means for rotation about said axis for operating the clamping means between its positions.

4,271,847

TEMPORARY ADJUSTABLE BIPOLAR LEAD

Kenneth B. Stokes, Brooklyn Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 28, 1979, Ser. No. 53,001
Int. Cl.³ A61N 1/04
U.S. Cl. 128—786 **3 Claims**



1. An adjustable bipolar transvenous lead comprising:

an inner lead having an electrical conductor with an electrode at a first end and an electrical connection at a second end wherein said inner lead is insulated along its outer surface;

an outer lead having a ring electrode at said first end wherein a first portion of said outer lead is slideably mounted coaxial to said inner lead between said first end and a junction intermediate said first end and said second end and wherein a second portion of said outer lead is not coaxial to said inner lead; and

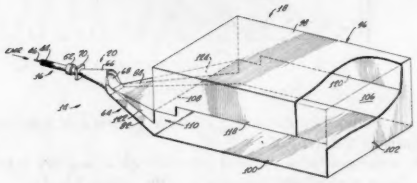
a lead introducer slideably mounted to said inner lead at said junction and fixedly mounted to said outer lead at said junction having a body with three apertures wherein said first portion of said outer lead passes through a first aperture, said second portion of said outer lead passes through a second aperture, and said inner lead passes through said third aperture at a point intermediate said junction and said second end and said third aperture is sealed by a rubber diaphragm fixedly mounted to said body through which said inner lead passes.

4,271,848

APPARATUS FOR ELECTROMAGNETIC RADIATION OF LIVING TISSUE AND THE LIKE

Paul F. Turner, North Salt Lake, and Om P. Gandhi, Holladay, both of Utah, assignors to Bio Systems Design, Corp., Salt Lake City, Utah

Filed Jan. 11, 1979, Ser. No. 2,584
Int. Cl.³ A61N 1/04
U.S. Cl. 128—804 **10 Claims**



1. Broadband electromagnetic radiation apparatus, for irradiating living tissue and tissue simulating matter, which comprises:

(a) a broadband electromagnetic radiation source having an output impedance substantially equal to an average impendance of living tissue and tissue simulating matter over a selected dynamic frequency range of at least about 5 to 1;

(b) transmission means connected to said source for transmitting electromagnetic waves therefrom, said transmission means having a characteristic impedance substantially equal to said average impedance throughout said frequency range;

(c) An applicator adapted for radiating electromagnetic energy into said tissue and tissue simulating matter, said applicator including parallel plate-type launching means having a characteristic impedance, when the applicator is in operative relationship with said tissue and tissue simulating matter for irradiation thereof, substantially equal to said average impedance throughout said frequency range; and,

(d) broadband transition means electrically connecting said tranmission means to said applicator for enabling substantially reflectionless transmission of electromagnetic waves from said transmission means thereto throughout said frequency range, said transition means being configured to have a charcteristic impedance substantially equal to said average impedance throughout said frequency range.

4,271,849

APPARATUS FOR PRODUCING RELIEF GROOVES IN PAN-SHAPED BONES

Günther Rehder, Stuhr, Fed. Rep. of Germany, assignor to Orthoplant Orthopadische Implantate GmbH & Co., Bremen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,808
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834296
Int. Cl.³ A61F 5/04, 17/32
U.S. Cl. 128—92 E **17 Claims**

1. Apparatus for producing relief grooves in a pan-shaped bone such as the acetabulum of a human hip joint, comprising:

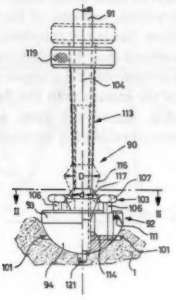
an elongated drive shaft having a free end;

a casing arranged at the free end of said drive shaft, said casing having an outside contour of generally hemispherical shape facing away from said drive shaft and which shape is at most coextensive with the pan contour of the bone;

cutting means arranged in said casing for movement transversely of the longitudinal axis of said drive shaft, said cutting means having a cutting edge which is movable between a first position inside said casing and a second

position outside said casing in a radial direction relative to the longitudinal axis of said drive shaft, said casing having passageways to allow said cutting edge to emerge from said casing toward the second position; and

an adjusting bush threadably connected to and arranged concentrically on said drive shaft for radially moving said



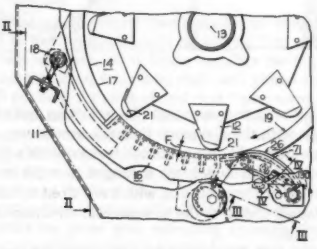
cutting means, said adjusting bush including a first section having an increasing outer diameter and a second, successively connected section have a decreasing outer diameter in the direction of the longitudinal axis of said drive shaft, the outer circumferential surfaces of said first and said second sections operatively engaging said cutting means.

4,271,850

CONCAVE SAFETY DOOR WITH SEALING AND LATCHING FEATURES

William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 27, 1980, Ser. No. 134,745
Int. Cl.³ A01F *12/16*
U.S. Cl. 130—27 JT **10 Claims**



1. A harvester having a threshing chamber, a crop inlet to the threshing chamber including transversely spaced vertical sidewalls, a rotatable threshing rotor within the threshing chamber and a concave beneath the rotor having a predetermined threshing clearance with the latter, characterized by

a safety door constituting a portion of a floor of the inlet to the threshing chamber forward of said concave, said safety door having transversely opposite ends adjacent said sidewalls and being pivotally connected at its front end to the harvester on a horizontal axis generally parallel to the axis of said threshing rotor for pivotal movement about said horizontal axis between an operating position in which the rear edge of said door is in confronting relation to the front end of said concave and a tripped position in which said door is pivoted downwardly to discharge rocks or the like, and

a seal structure between one transverse end of said door and one of said sidewalls including a fore and aft extending part having a portion disposed in overlapping complementary relation to the upper surface of said one end of said door, said seal structure staying in a fixed position when said safety door swings downwardly to its open position.

4,271,851

PROCESS FOR FABRICATING ARTICLES FROM ULTRA HIGH MOLECULAR WEIGHT POLYMER MATERIAL

Gerald P. Dubuque, 27 Oak Ave., Cataumet, Mass.

Filed Nov. 7, 1977, Ser. No. 849,529
Int. Cl. B29F *1/00*
U.S. Cl. 264—328 **1 Claim**

1. A process for fabricating an article from ultra high molecular weight polymer material comprising in combination the steps of:

a. providing a cavity mold of the article to be fabricated, said

mold having at least two sections, at least one of which is compressible against the other;

b. evacuating the air from said cavity mold;

c. melting a quantity of said polymer;

d. injecting a sufficient quantity of said melted polymer into said cavity mold to fill said mold;

e. compressing said mold sections;

f. cooling said mold and said article; and

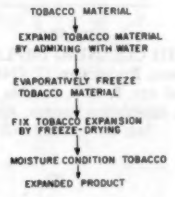
g. ejecting said article from said mold.

4,271,852

METHOD FOR INCREASING THE FILLING CAPACITY OF TOBACCO

Eugene Glock, Richmond, Va., assignor to American Brands, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 913,246, Jun. 6, 1978, Pat. No. 4,161,953, which is a continuation of Ser. No. 744,042, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 628,912, Nov. 5, 1975, abandoned, which is a continuation of Ser. No. 40,726, May 20, 1970, abandoned. This application Aug. 7, 1978, Ser. No. 931,624
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—292 **10 Claims**



1. A method for expanding tobacco tissue which consists essentially of:

(A) admixing tobacco tissue with hot water at a temperature of at least about 70° C. to the boiling point thereof, said hot water being added in an amount such that substantially all the hot water is absorbed, said tobacco tissue being expanded by the absorbed hot water;

(B) evaporatively freeze-drying the expanded tobacco tissue of step (A) under subatmospheric pressure;

(C) heating the freeze-dried expanded tobacco tissue of step (B) while under subatmospheric pressure;

(D) recovering tobacco tissue having a retained expanded condition free of an objectionable amount of tackiness

caused by hygroscopic extractives on the surface of the tobacco tissue; and

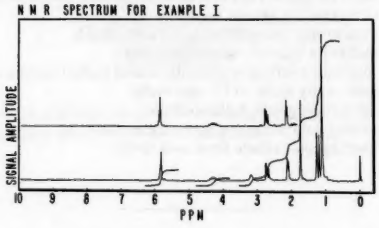
(E) moisture conditioning the evaporatively freeze-dried tobacco tissue.

4,271,853

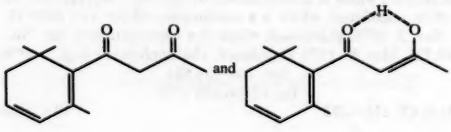
USE FOR AUGMENTING OR ENHANCING THE AROMA AND TASTE OF SMOKING TOBACCO AND SMOKING TOBACCO ARTICLES BY ADDING THERETO 1-(2,6,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-1,3-BUTANEDIONE

Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 887,630, Mar. 17, 1978, Pat. No. 4,157,351.
This application Nov. 17, 1978, Ser. No. 961,686
Int. Cl.[3] A24B *15/36*
U.S. Cl. 131—276 **3 Claims**



1. A process for augmenting or enhancing the organoleptic properties of a consumable material selected from the group consisting of tobaccos and smoking tobacco articles comprising the steps of adding to said consumable material an organoleptic property modifying quantity of an equilibrium mixture containing coompounds having the structures:

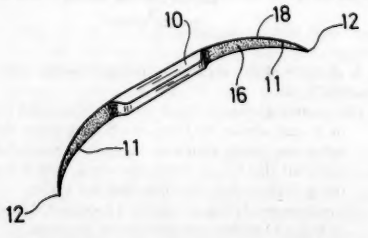


4,271,854

TEETH CLEANING IMPLEMENT

Sigurd W. Bengtsson, Bruksgatan 17, 41451 Göteborg, Sweden

Filed Apr. 5, 1979, Ser. No. 27,500
Claims priority, application Sweden, Apr. 18, 1978, 7804291
Int. Cl.[3] A61C *15/00*
U.S. Cl. 132—89 **5 Claims**



1. A cleaning implement, made of synthetic material, comprising:

(a) a rigid middle 4-sided gripping portion; and

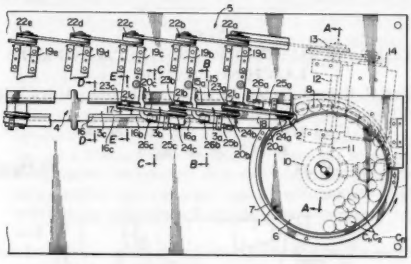
(b) a pair of solid combined picking and scraping end portions extending integrally from opposite ends of said gripping portion, each of said end portions having an isosceles triangular cross-section, the sides of which being somewhat longer than the base of the triangle, the three sides of the triangular cross-section being straight, said end portions having a gradual curvature and taper from said gripping portion to their distal ends, the curvatures being in the same direction, and one of the lateral sides of each said end portions having a roughened surface, whereby the curved portions may be selectively inserted into the interproximal interstices in the upper and in the lower jaw at both sides of the mouth with the flat base of the curved portion disposed against the gum, and in each instance with the implement extending forwardly out of the mouth.

4,271,855

COIN SELECTING APPARATUS

Nobuo Ueda, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,920
Int. Cl.[3] G07D *3/02*
U.S. Cl. 133—3 D **5 Claims**



1. A coin selecting apparatus for selecting mixed coins in accordance with the diameters thereof, comprising:

a selecting track having a bottom formed with a plurality of selecting holes which are arranged in a file in the flow direction of the coins and which are sized to have gradually larger widths in the downstream direction of the coin flow; and

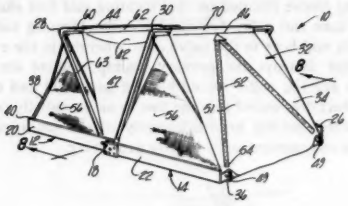
a selecting belt mechanism for conveying the coins on said selecting track so that the coins fall into the selecting holes in the order of increasing coin diameters, said selecting belt mechanism including a plurality of belt carrying mechanisms arranged on said selecting track for carrying a corresponding number of belts such that the running directions of the belts are inclined at a preset angle with respect to the longitudinal direction of said selecting track, and such that each of the belts partially overlaps the next downstream belt;

said apparatus further comprising a plurality of arms, one for each said belt carrying mechanism, normally arranged to extend substantially over each of the coins of said selecting track, and pivoting means, one for each said arm, for pivoting said each arm away from said coins so as to provide easy access to the coins being conveyed, whereby to permit easy and efficient removal of a deformed coin when a jam occurs on said selecting track due to the existence of said deformed coin.

4,271,856
FOLDING TENT

Robert W. Ferguson, 1521 Granger, Ann Arbor, Mich. 48104

Filed Nov. 5, 1979, Ser. No. 91,182
Int. Cl.[3] B60D 3/32; A45F 1/06
U.S. Cl. 135—4 A 12 Claims



1. In a folding tent adapted to be mounted on a vehicle top or on other suitable supporting surfaces, a frame and base assembly comprising

first and second rigid base sections hingedly secured together in a fore-and-aft direction at their respective inner ends and foldabie together with the first base section nested in the second base section so as to define a container and unfoldable laterally apart into aligned relation to define a planar platform, said base sections when in their unfolded positions having upturned forward and after edges, said first base section having a smaller fore-and-aft dimension than said second base section to facilitate nesting the base sections together, said second base section having extensions from its forward and after edges overlapping the corresponding edges of said first base section, and hinge pins extending through said extensions and said corresponding edges to provide the hinge connections between the first and second rigid base sections; and

first and second U-shaped frame members hingedly connected at their ends respectively to said first and second rigid base sections, each frame member having upright portions extending from said ends and joined by a fore-and-aft portion, the ends of said first frame member being on the inboard side of said forward and after edges of said first base sections and connected by pivot pins extending through the first base section edges adjacent to said hinge pins and laterally outward thereof, and the ends of said second frame member being on the inboard side of said forward and after edges of said second base section and connected by pivot pins extending through the second base section edges adjacent to said hinge pins and laterally outward thereof.

4,271,857
FIRE SAFE VALVE

Frederick G. Rowe, Pudsey, England, assignor to Cameron Iron Works, Inc., Houston, Tex.

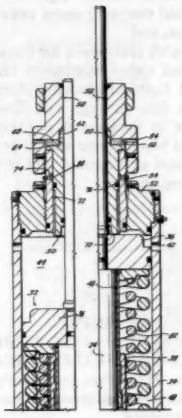
Filed Aug. 2, 1979, Ser. No. 63,157
Claims priority, application United Kingdom, Apr. 30, 1979, 14878/79
Int. Cl.[3] F16K 13/00
U.S. Cl. 137—73 7 Claims

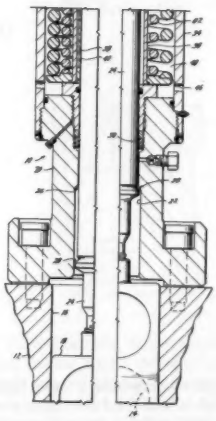
1. A fire safe valve comprising

a valve body having a flow passage therethrough and a valve chamber intersecting the flow passage,

a valve member slidable in said valve chamber to open and close flow through the flow passage,

a stem connected to the valve member and having a shoulder thereon,





a bonnet secured to said body and having a bore through which said stem extends and a seat surrounding said stem,

means for sealing between said stem and said bonnet bore positioned outward from said seat,

an actuator connected to said stem to optionally move said valve member axially to open and closed position,

a sleeve surrounding said stem,

a fusible material supporting said sleeve in a normal stop position to be engaged by said actuator whenever said valve member is in closed position,

melting of said fusible material responsive to fire or excess heat allowing said sleeve to move outward from its normal stop position, and

means associated with said sleeve for insuring movement of said actuator and valve member to closed position, on melting of said fusible material and movement of said sleeve, to close flow through said flow passage and to move said stem to backseated position with said stem shoulder on said bonnet bore seat to provide a fire resistant metal-to-metal seal around said stem to contain the fluids in said flow passage.

4,271,858

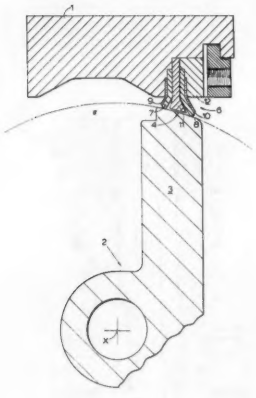
BUTTERFLY VALVE HAVING TEMPERATURE RESPONSIVE SEALING MEANS

Christopher J. Snape, Halesowen, and Philip J. Burton, Birmingham, both of England, assignors to Charles Winn (Valves) Limited, London, England

Filed Nov. 8, 1978, Ser. No. 958,889

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—74 **1 Claim**



1. A butterfly valve comprising a valve housing defining a passageway through which fluid is to pass, a valve (member) disc pivotally mounted in the housing for movement between a closed position, in which it prevents the flow of fluid along the passageway, and an open position in which the flow of fluid is allowed, and an annular seal mounted on the valve housing to seal between a peripheral surface of the valve (member) disc and a wall of the passageway when the valve (member) disc is in its closed position, the seal comprising a primary sealing element and a fireproof ring, and the valve comprising first and second axially aligned shafts mounting the valve disc in the housing, the first shaft (pivotally connecting the valve member to) being mounted in a blind bore in the housing, and the second shaft being mounted for rotation in the housing for actuation of the valve and extending into a bore in the valve disc, connecting means for transmitting rotation of the second shaft to the valve (member) disc but permitting movement of the valve (member) disc radially of the second shaft, and fire-destructible locating means which prevents said radial relative movement and comprises a fire-destructible bearing sleeve (located on the) locating said first shaft in said blind bore and a fire-destructible collar locating said second shaft in said bore in the valve disc, whereby in the event of a fire that destroys the primary sealing element the bearing sleeve and the collar would also be destroyed and the valve (member) disc would become free to move radially relative to its normal pivotal axis and axially of the passageway into sealing engagement with the fire proof ring.

4,271,859

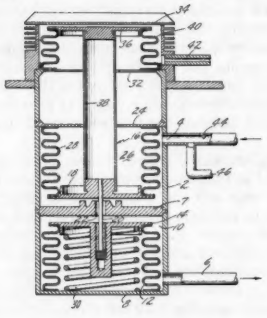
TEMPERATURE SENSOR

Joseph W. Lawsing, Windsor Locks, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 26, 1979, Ser. No. 97,584

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—85 **9 Claims**



1. A pressure transducer including:

a casing having a hydraulic fluid inlet and outlet and a gas pressure inlet;

a valve plate in said casing between said fluid inlet and outlet and having a fluid passage therein;

a movable valve element in said casing cooperating with said plate to control the flow of fluid therethrough;

a pair of bellows each secured at one end to and supporting said element with one bellows on each side of the plate and responsive to the fluid pressures on opposite sides of the plate;

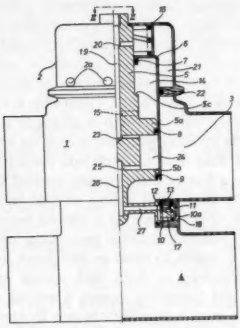
a second plate in said casing in parallel spaced relation to said valve plate and having an opening thereon through which a portion of the valve element extends; and

a gas sensitive bellows also secured to said element and exposed to gas pressure from said gas inlet said gas bellows being located on the side of the second plate remote from the valve plate and the pair of bellows.

4,271,860
VALVE

Erik H. O. Jeppsson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Dec. 20, 1978, Ser. No. 971,308
Claims priority, application Sweden, Dec. 23, 1977, 7714736
Int. Cl.[3] F16K *23/00, 31/122*
U.S. Cl. 137—240 3 Claims



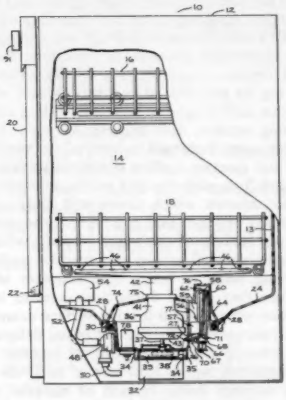
1. A valve comprising a housing having a passage with entrance and exit ports for fluids passing through said housing, stem means mounted in said housing, closure means movable along said stem means for opening and closing said fluid passage, sealing means between said closure means and said stem means, seating means including means normally maintaining said seating means in a position for engagement and disengagement by said movable closure means, means mounting said seating means for movement with said closure means when said closure means engages said seating means, spring means engaging said closure means and biasing the latter into engagement with said seating means, chamber means associated with said closure means for admission of a pressurized fluid, fluid passage means connecting with said chamber means for subjecting said closure means to fluid pressure to move said closure means to valve-open position, and seat-sealing means engaging said seating means in valve-open position, to seal sad seating means against leakage of fluid thereby, said seat-sealing means becoming engaged by said closure means as said seating means is moved by said closure means.

4,271,861
DISHWASHER FILL LEVEL CONTROL ARRANGEMENT

John G. Crawford, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 11, 1979, Ser. No. 83,911
Int. Cl.[3] F16K *31/18*
U.S. Cl. 137—387 7 Claims

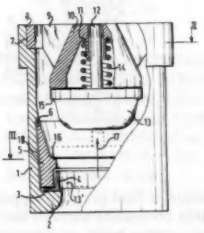
1. A dishwashing appliance comprising:
a wash chamber;
fill means for supplying liquid to said wash chamber;
a sump centrally positioned in the bottom of said wash chamber, defining the lowermost portion thereof, for accumulating liquid supplied to said wash chamber;
pump means including a housing centrally positioned within said sump for circulating liquid accumulated in said sump throughout said wash chamber;
said pump means further including impeller means rotatably mounted within said pump housing for rotation in a substantially horizontal plane; said impeller means having a bottom edge defining a dynamic prime liquid level; said impeller means being operative to prevent the liquid level in said sump from exceeding said prime liquid level until said pump means is fully primed;
float means mounted in said sump in close proximity to said pump housing for movement to a full position only when the liquid level in said sump exceeds the prime liquid level by a predetermined amount; and
fill control means responsive to the position of said float means and operative to prevent said fill means from supplying liquid to said wash chamber when said float means is in its full position;
whereby entry of liquid into the wash chamber is prevented when the liquid level in the wash chamber exceeds said prime liquid level by a predetermined amount.



4,271,862
CHECK VALVE AND METHOD OF MANUFACTURING SAID CHECK VALVE

Govert J. Snoek, Velp, Netherlands, assignor to Inter Ocean N.V., Curacao, Netherlands

Filed May 8, 1979, Ser. No. 37,040
Claims priority, application Netherlands, May 8, 1978, 7804923
Int. Cl.[3] F16K *15/06*
U.S. Cl. 137—511 4 Claims



1. In a check valve assembly, in combination:
a valve housing having a bore therethrough and having an uninterrupted integral shoulder projecting inwardly of said bore, said shoulder presenting an annular seating surface and said housing also having an integral reaction surface extending radially outwardly with respect to said bore and facing in the direction of said seating surface but spaced therefrom;
a diaphragm comprising a substantially cylindrical skirt presenting a sealing mouth at one end thereof and having a radially outwardly projecting flange spaced from said sealing mouth, said flange being engaged on said seating surface and said diaphragm being formed of thin, elastic material whereby said sealing mouth may receive and be

expanded by a check valve body to effect sealing engagement therewith while, at the same time, the diaphragm is propense to unwanted deformations if rotational clamping of its flange against said seating surface is used with sufficient force as to effect sealing thereat; and

means for clamping said flange against said seating surface without imparting rotational clamping of said flange to effect a seal between said flange and said seating surface so as to avoid said unwanted deformations of said diaphragm, said means comprising a generally cylindrical member having an end face at one end thereof adapted to bear against said flange and hold it in sealing contact with said seating surface, said member having a locking surface facing away from said one end of the member and engaging said reaction surface of said valve housing and being spaced from said one end of the member by a predetermined amount which causes said flange to be sealingly clamped between said end face of the member and said seating surface of the valve housing when said locking surface is seated against said reaction surface, said valve housing being of lesser bore diameter at said reaction surface that is said cylindrical member at said locking surface whereby said locking surface cannot engage with said reaction surface without radial deforation of one of the housing and said cylindrical member prior to such engagement, and at least one of said valve housing and said member being formed of material allowing such deformation, and said cylindrical member having a tapering surface between said one end thereof and said locking surface to facilitate the deformation necessary to allow axial insertion of said member into locked engagement within said valve housing.

4,271,863

PRESSURE TAPPING

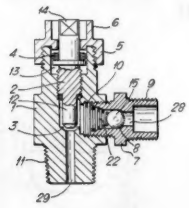
Reginald M. Bishop, Ipswich, England, assignor to Crane Limited, London, England

Filed Apr. 19, 1979, Ser. No. 31,959

Claims priority, application United Kingdom, Apr. 21, 1978, 15808/78; Dec. 11, 1978, 47912/78

Int. Cl.³ F16L *37/28, 37/10*

U.S. Cl. 137—557 **2 Claims**



1. In combination, a fluid pressure tapping and a probe-type adaptor releasably connected thereto, said fluid pressure tapping comprising a valve body, an inlet portion of said valve body, an external screwthread around the periphery of said inlet portion, a fluid inlet bore extending through said inlet portion coaxially with said external screwthread, said bore being small in cross section in relation to said inlet portion, an internal end of said fluid inlet bore within said valve body, a conical seating at said internal end, an internal screwthread within said valve body spaced from said internal end of said inlet bore, a cavity within said valve body between said internal screwthread within the valve body and said internal end of said inlet bore, a singe-piece elongate closure member extending into the valve body, an external screwthread around said closure member engaging said internal screwthread within said valve body, an internal end portion of said closure member extending into said cavity, a conical tip of said internal end portion to permit sealing engagement of said closure member with said conical seat, an external end portion of said closure member projecting from said valve body, at least one lateral face made on said external end to permit the latter to be held and turned, whereby said closure member is selectively operable between an open setting in which said conical tip is spaced from said conical seat, and a closed setting in which said tip and said seat are in sealing engagement, to control and shut off respectively fluid flow through said fluid inlet bore into said cavity, said tapping further comprising a shield portion connected to said valve body and surrounding said external end portion to prevent inadverent turning of said closure member attached to said valve body, connector means including a passageway in said connector means in communication with said cavity in said valve body, a ball check-valve in said connector means the ball of which is arranged to be urged into a closed position by fluid pressure acting on said ball from said cavity to stop fluid flow through said passageway in said connector means, a frustoconical spring located in said passage in said connector means and acting on said ball check-valve to urge said ball check-valve to a closed position, an annular flange on said connector means projecting into said passage of said connector means to form an abutment for an end of said coil spring whereby to hold said spring against undesired release from said connector means, a smooth cylindrical, seal-receiving bore in said connector means located downstream of said ball check-valve means to form an outlet end portion of said passageway in said connector means, an internal annular shoulder within said connector means at an internal end of said seal-receiving bore to form a stop for a probe-type adaptor when the latter has been inserted into the connector means to the correct extent, and external screwthreading on said connector means; said probe-type adaptor comprising: a probe movable in said passageway of said connector means to open said ball check-valve in said connector means, a shoulder on said probe which abuts said shoulder within the connector means, a ring rotatably carried on said probe, an internal screwthread on said ring in engagement with said external screwthreading of said connector means, and a sealing member carried by said probe to make internal contact with said seal-receiving bore, said probe-type adaptor including a bore, whereby said adaptor opens said ball check-valve to allow fluid flow from said inlet bore through said probe-adaptor bore when said valve body is open.

4,271,864

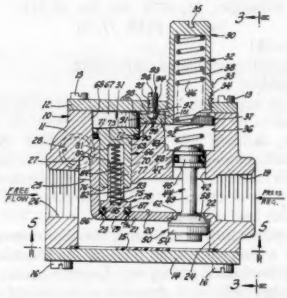
PRESSURE REGULATING VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Mar. 31, 1980, Ser. No. 135,777

Int. Cl.³ G05D *16/10*

U.S. Cl. 137—599 **8 Claims**



1. A combination pressure regulating and exhaust air valve, which does not include any flow rate control valve structure, for regulating the pressure of pressurized air in a flow circuit

which includes a pneumatically controlled apparatus, characterized in that the valve includes:

(a) a valve body means having an upstream pressurized air supply port for connection to a source of pressurized air, and a downstream working port for connection to a pneumatically controlled apparatus in said flow circuit, and a single flow path interconnecting said ports;

(b) an adjustable pressure regulator valve means operatively mounted in said flow path and having a regulator valve element movable between open and closed positions to provide a regulated downstream pressure, without any flow control action, at the downstream working port when pressurized air is flowing from the source of pressurized air into the upstream port and through the flow path in one direction to the downstream port, and said regulator valve element moves to a closed position when the downstream pressure reaches a predetermined reduced level; and,

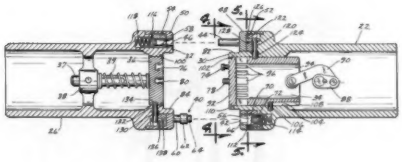
(c) a non-adjustable exhaust check valve means operatively mounted in said flow path, in parallel with said adjustable pressure regulator valve means, and disposed in a closed position when pressurized air is flowing through the flow path in said one direction to the downstream port, and movable to an open position to provide a free flow of air exhausting through said flow path in the other direction to the upstream port without any flow control action.

4,271,865

DRY BREAK COUPLING VALVE

Robert L. Galloway, 100 E. Columbus, and Charles R. Galloway, 800 N. Taylor, both of Mount Ayr, Iowa 50854

Filed May 14, 1979, Ser. No. 38,475
Int. Cl.³ F16L *37/28, 37/24*
U.S. Cl. 137—614.06 **12 Claims**



1. An apparatus for coupling together and uncoupling a pair of fluid conduits comprising a first housing adapted for connection to one fluid conduit, a second housing adapted for connection to the other fluid conduit,

said first and second housings having respective open end portions adapted for engagement with one another for fluid flow between said housings,

coacting connector means on said first and second housings operative to couple said housings together in response to relative rotary movement between said engaged open end portions in one direction and operative to uncouple said housings in response to relative rotary movement between said engaged open end portions in the opposite direction,

said first housing including a piston supported for axial sliding movement therein between a first position wherein fluid flow through said first housing is blocked and a second position wherein fluid is free to flow through said first housing,

said second housing including a poppet supported for axial movement therein between a first position wherein fluid flow through said second housing is blocked and a second position wherein fluid is free to flow through said second housing,

coacting stop means on said second housing and poppet, said coacting stop means being engageable when said poppet is in the first position therefor to fix the poppet in said first position,

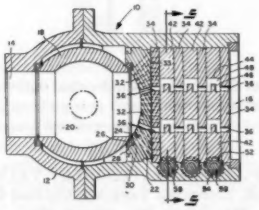
each respective housing including means engageable by said respective end portions and responsive to said relative rotary movement in said one direction for engaging said coacting stop means and responsive to said relative rotary movement in said opposite direction for disengaging said coacting stop means.

4,271,866

DRAG BALL VALVE INCLUDING VARIABLE PRESSURE REDUCING MEANS

Roger Bey, Illzach, France, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 2, 1979, Ser. No. 26,625
Int. Cl.³ F16K *5/06, 5/10*
U.S. Cl. 137—625.3 **11 Claims**



1. A ball valve comprising a housing having an inlet port and an outlet port, ball means for opening and closing said valve, feeder ring means sealably mating with said ball means for directing the flow of fluid through said valve into a plurality of passages, and labyrinth means for varying the pressure reduction of the fluid that passes through said valve by subjecting the fluid to a series of turns, said labyrinth means having the same plurality of multi-turn passages as said feeder ring means with the passages of said feeder ring means and said labyrinth means being aligned at their mating surfaces.

4,271,867

METHOD AND APPARATUS FOR HYDRAULICALLY CONTROLLING SUBSEA WELL EQUIPMENT

Lionel J. Milberger, and Albert R. Tucker, both of Spring, Tex., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 873,323, Jan. 30, 1978, Pat. No. 4,185,541.
This application Mar. 26, 1979, Ser. No. 23,933
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625.21 **9 Claims**

1. A fluid control valve comprising:

an outer housing having an inlet port, a vent port and a plurality of outlet ports;

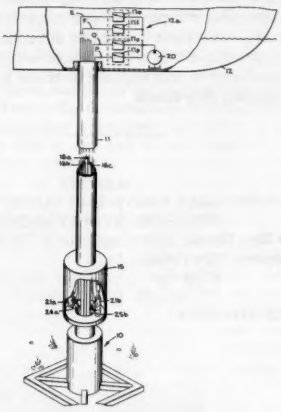
a rotor rotatably mounted in said housing, said rotor being movable to a plurality of stop positions, said rotor having a plurality of passageways at each of said stop positions;

means for connecting a predetermined set of said outlet ports to said inlet port through said passageways at each of said positions;

means for connecting a predetermined set of outlet ports to said vent port through said passageways at each of said stop positions, wherein the venting of individual outlet ports at any one of said stop positions does not affect the venting of individual outlet ports at any of the other stop positions; and

means for blocking a predetermined set of outlet ports at

each of said stop positions, wherein the blocking of individual outlet ports at any one of said stop positions does



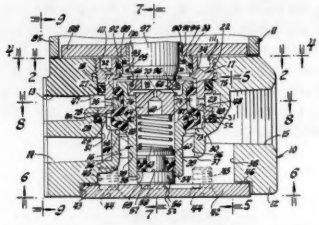
not affect the blocking of individual outlet ports at any of the other stop positions.

4,271,868

PILOT OPERATED PILOT VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Feb. 21, 1979, Ser. No. 13,472
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.64 **8 Claims**



1. A pilot operated three-way pilot valve including a valve body with a pressurized pilot air inlet port, a cylinder port, and an exhaust port, characterized in that:

(a) a first passageway means interconnects said pilot air inlet port and said cylinder port;

(b) a second passageway means interconnects said cylinder port and said exhaust port;

(c) a valve spool is movably mounted in said valve body for movement between an inoperative position and an operative position so that when the valve spool is in the inoperative position it blocks the first passageway means and opens the second passageway means, and when the valve spool is in the operative position it opens the first passageway means and blocks the second passageway means;

(d) means for normally biasing the valve spool to the inoperative position;

(e) said means for normally biasing the valve spool to the inoperative position includes a cylindrical air return chamber formed axially through the valve spool, a piston slidably mounted in one end of the air return chamber for sealingly enclosing the same, a cylindrical valve seat member fixedly mounted in the other end of the air return chamber for enclosing the same and having a valve seat formed on the exterior side thereof and a third passageway means continuously connecting the inlet port with said air return chamber in the valve spool, a fourth small diameter orifice passageway means formed through said valve seat member for connecting the air return chamber to the valve seat and to the exterior of the valve spool, a pilot air chamber in the valve body exterior to said other end of the air return chamber in the valve spool and communicating with said fourth small diameter orifice passageway means; and,

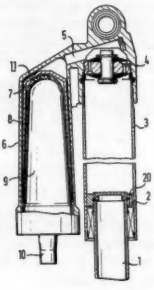
(f) means movably mounted in said pilot air chamber for controlling the flow of pilot air through said fourth small diameter orifice passageway means, and being movable to a first position to block air flow from said fourth small diameter orifice passageway means into said pilot air chamber and to exhaust said pilot air chamber to the atmosphere, and being movable to a second position to block flow from said pilot air chamber to the atmosphere and allow pilot air to flow through said small diameter orifice fourth passageway means and into said pilot air chamber to create an air pressure in said pilot air chamber for exerting a shifting force against the valve spool to shift it to the operative position.

4,271,869

HYDROPNEUMATIC PRESSURE RESERVOIR ASSEMBLY

Johann Weidl, Heidenfeld; Günter Heyer; Wilhelm Wecker, both of Schweinfurt; Gerhard Weippert, Bad Kissingen, and Paul Spichala, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,126
Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821492
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **7 Claims**



1. A hydropneumatic assembly comprising: a housing having a generally longitudinal configuration and defining an axis; a diaphragm operatively mounted within said housing and defining therein a liquid chamber on one side of said diaphragm and a gas chamber on the opposite side thereof; said liquid chamber being defined between an inner wall of said housing and said diaphragm, with said diaphragm being arranged to be urged toward said inner wall under the influence of gas pressure within said gas chamber; opening means disposed within said liquid chamber at an axial end of said longitudinal housing for permitting flow of liquid into and out of said liquid chamber; and a frame member constructed with a basket-like configuration interposed between said diaphragm and said housing inner wall within said liquid chamber and extending generally over the entire longitudinal length of the housing, said frame member being formed with a plurality of generally elongate arms distributed circumferentially about said diaphragm and extending essentially in the axial direction of said housing; said arms being spaced apart to define longitudinally extending

ducts therebetween, each of said ducts being arranged to extend generally over the entire axial length of said frame member toward said opening means contiguously with the inner wall of said housing and opening throughout their length to both sides of the frame member.

4,271,870

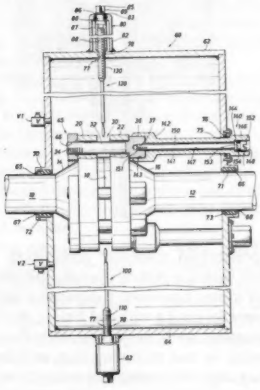
METHOD AND APPARATUS FOR BLOCKING THE FLOW OF FLUIDS THROUGH AN ELONGATED PIPE SECTION

Johnny L. Butler, 1200 Northwood, #212, Baytown, Tex. 77520, and Joe L. Valigura, Jr., P.O. Box 1286, Anahuac, Tex. 77514

Filed May 2, 1979, Ser. No. 35,309

Int. Cl.³ F16L *55/10, 55/18*

U.S. Cl. 138—94.3 **22 Claims**



1. In a method for blocking off the internal flowpath in a tubular pipe length formed by a plurality of pipe sections connected at flanged joints by bolts, the steps of:

(a) forming an essentially airtight chamber around the pipe length at a position around oneof the flanged joints by assembling an essentially airtight housing at that position;

(b) displacing a plurality of sockets interiorly of the housing in a direction essentially parallel to the centerline of the pipe at the joint to engage a plurality of said connecting bolts;

(c) retracting at least some of the connecting bolts by said sockets to a position out of radial alignment with the abutting edges of the pipe sections at said joint;

(d) advancing a flow cut-off blind in a direction essentially radially of the centerline of the pipe section such that the blind is displaced through the region previously obstructed by bolts prior to the performance of Step (c) and then into the interior of the pipe section to block the internal flowpath; and

(e) tightening the bolts at said joint to clamp the blind between the abutting pipe edges.

4,271,871

WOVEN SLIDE FASTENER, METHOD AND APPARATUS FOR ITS MANUFACTURE

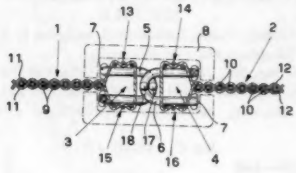
Carmelo Motta, Milan, Italy, assignor to Fastex s.r.l., Monza, Italy

Division of Ser. No. 728,733, Sep. 30, 1976, which is a continuation of Ser. No. 557,272, May 14, 1975, abandoned. This application Oct. 23, 1978, Ser. No. 953,952

Claims priority, application Italy, May 14, 1974, 22681 A/74; Dec. 6, 1974, 30272 A/74

Int. Cl.³ D03D *41/00*

U.S. Cl. 139—384 B **10 Claims**



1. A method for manufacturing slide fasteners comprised of the steps of:

weaving a supporting tape from warp and weft threads and simultaneously forming one edge into a two-arm edge with the two-arms being spaced apart,

feeding a synthetic monofilament which has been precrimped at regular intervals as a warp thread,

weaving the monofilament into the two-arm edge of the supporting tape by inserting a flexible core member into the sapce between the two-arms and while forming the two-arm edge bending the monofilament back and forth around the core to form the monofilament into a continuous meander configuration having rearwardly positioned returns, leg portions covered, at least in part, by the fabric forming the two-arm edge and exposed U-loops which extend outwardly beyond the two-arm edge to act as linking elements to be coupled by the slide.

4,271,872

DRIVE MECHANISM FOR A SUB-MECHANISM OF A WEAVING MACHINE

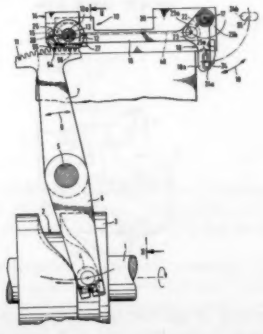
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 21, 1979, Ser. No. 22,479

Claims priority, application Switzerland, Mar. 29, 1978, 3333/78

Int. Cl.³ D03D *45/24*

U.S. Cl. 139—439 **17 Claims**



1. In combination,

a reciprocable sub-mechanism for movement between a pair of end positions;

a main drive; and

a transmission connected between said main drive and said sub-mechanism for driving of said sub-mechanism from said main drive; said transmission including a crank drive having a crank shaft drivingly connected to said main drive for oscillation thereby with at least one reversal point of the oscillation movement of said crank shaft in the region of a dead-center position of said crank drive.

4,271,873

PAIR OF GRIPPERS FOR WEAVING LOOMS WITHOUT SHUTTLE

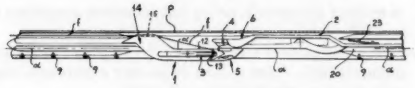
Graziano Genini, Stabio, Switzerland, assignor to Albatex A.G., Vaduz, Liechtenstein

Division of Ser. No. 913,071, Jun. 6, 1978, Pat. No. 4,235,261. This application Feb. 5, 1980, Ser. No. 119,003

Claims priority, application Switzerland, Jun. 9, 1977, 7102/77

Int. Cl.³ D03D *47/18*

U.S. Cl. 139—446 **1 Claim**



1. In a pair of grippers for shuttleless weaving looms, of the type wherein a first gripper grasps a weft thread at one end of a loom and carries it to the center of a warp shed, while a second gripper receives the weft thread at the center of the warp shed from the carrying gripper, and transports it to the opposite end of the loom, where it abandons the same, and weft thread grasping and holding members mounted on head parts of the grippers and that cooperate between them for exchanging the weft thread; the improvement in which portions of said head parts of the grippers slide on each other over a portion of the path of the grippers immediately before and after weft thread exchange, the areas of contact between said portions of the respective grippers being disposed in only a single plane, said head portions of the grippers being disposed entirely on opposite sides of said plane for a length along each said head portion which is at least as great as the length of said portion of said path.

4,271,874

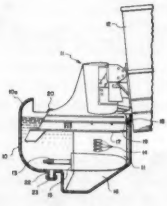
METHOD AND DEVICE FOR INTRODUCING LIQUID INTO BOAT MOTOR COOLING SYSTEMS

Darrell B. Brady, 2361 S. Redwood Rd., Salt Lake City, Utah 84119

Filed Nov. 29, 1979, Ser. No. 98,606

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—1 **12 Claims**



10. A method of introducing liquid into the cooling system of boat motors having drive units with skags, cavitation plates, propellers and water intakes, comprising the steps of placing a contoured container about at least the lower portion of the drive unit after the propeller has been removed, the lower portion of the unit extending from approximately the cavitation plate downwardly, the container being closely fitting about the skag and parts below the water intake and more loosely fitting about the water intake and above so that the container, when in place about the drive unit, will hold the liquid to be introduced into the cooling system; placing the liquid in the container; and running the motor for a period of time sufficient to distribute the liquid through the cooling system.

4,271,875

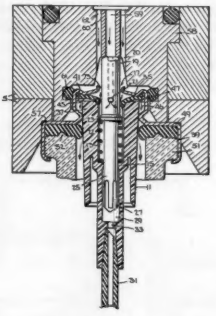
DISPENSER ADAPTED FOR FAST PRESSURE FILLING

Philip Meshberg, 2500 S. Ocean Blvd., Bldg. 3, Apt. 1-A, Palm Beach, Fla. 33480

Continuation-in-part of Ser. No. 944,401, Sep. 21, 1978, abandoned. This application Aug. 21, 1979, Ser. No. 68,429

Int. Cl.³ G01F *11/02*; B65D *83/14*

U.S. Cl. 141—3 **25 Claims**



1. In a pressurized dispenser comprising: a container; a mounting cup having a central opening therein, said mounting cup attached to said container; a dispensing means comprising a body member forming a tank and having an open top portion with a dispensing stem projecting therefrom through said central opening in said mounting cup, said body retained in said mounting cup; and a diaphragm interposed between said body and said mounting cup, sealing around said projecting stem at least when said stem is in an unoperated position, the improvement comprising:

(a) a passageway formed in said body extending across the top of and through said body, said passage in communication with the tank in the area below the diaphragm;

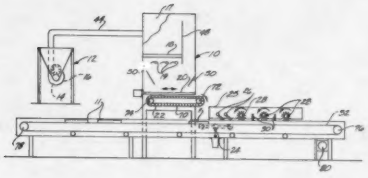
(b) an annular gasket interposed between said mounting cup and said container, said gasket having an opening with the same profile as the outside of said body disposed so as to seal against said body to interrupt communication between said passageway and said container; and

(c) means to permit a pressure medium to be supplied to the area of said tank below said diaphragm whereby, when a medium is supplied under high pressure to the area below said diaphragm it will have a free path across the top of said body and along the side thereof to said gasket, will deform said gasket away from the side of said body permitting flow into said container and whereby, after said medium at high pressure is removed, the pressure remaining inside said container will push said gasket upward into sealing contact with said body to prevent leakage of said medium from said container.

4,271,876
METHOD AND APPARATUS FOR FILLING HONEYCOMB PANELS WITH FIBER INSULATION

Henry R. Nash, 10659 El Poche, South El Monte, Calif. 91733, and Edgar M. Nash, 2613 Bridalpath La., Modesto, Calif. 95350

Filed Apr. 5, 1979, Ser. No. 27,251
Int. Cl.³ B65B *1/24*
U.S. Cl. 141—12 **26 Claims**



1. An apparatus for filling panels with particulate matter comprising:

means for reducing fibrous material into a particulate composition; p1 a particulate feeder;

means for transferring the particulate from the reducing means to the particulate feeder, the particulate feeder having a particulate feeder chamber for temporarily storing the particulate transferred from the reducing means;

a reciprocating grating located within the particulate feeder chamber for uniformly passing therethrough in response to reciprocation of said grating the particulate from the particulate feeder chamber, the grating having a plurality of openings, each opening being sized marginally larger than the size of the particulate;

means, coupled to the grating, for controllably reciprocating said grating, the grating passing uniformly therethrough particulate at a rate corresponding to the rate of reciprocation of the reciprocating means;

an endless direction reversing particulate feeder belt located below the grating, said feeder belt adapted to receive the particulate passed through the grating and to discharge, at a point of belt direction reversal, said particulate in a gravity feed manner;

the belt rotating about guide roller means, said belt located below and adapted to receive particulate passing through the grating, the belt having a plurality of spaced apart ribs extending above the surface of the belt to maintain the particulate upon the belt, the particulate dropping onto said panel from the belt in a gravity feed manner at a point of belt direction reversal;

means for removing excess particulate from the panels surfaces; and

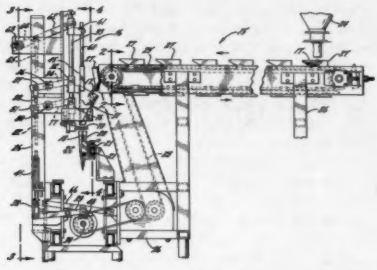
means for compacting the particulate within the panels to obtain a uniform density thereof.

4,271,877
PACKAGING MACHINE WITH FUNNEL-TYPE FILLING MECHANISM

William C. Whitaker, and Allen B. Canfield, both of Sarasota, Fla., assignors to Rexham Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,458
Int. Cl.³ B65B *43/56*
U.S. Cl. 141—166 **10 Claims**

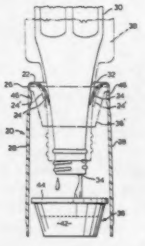
6. A packaging machine for depositing product into upright pouches adapted to be advanced step-by-step along a predetermined path and each adapted to dwell in a filling station, said machine comprising an upright funnel mounted to move downwardly and upwardly between receiving and depositing positions, said funnel being located above said filling station when said funnel is in said receiving position and being located at least partially within a pouch dwelling in said filling station when the funnel is in said depositing position, said funnel comprising first and second plates, said first plate being disposed in a substantially vertical plane, said second plate being mounted to swing between closed and open positions relative to said first plate about a substantially horizontal axis located above the lower end of said second plate and being located in said closed position when said funnel is in said receiving position, said second plate diverging upwardly away from said first plate and retaining product in said funnel when said second plate is in said closed position, said second plate extending substantially parallel to said first plate and allowing product to be dispensed from the lower end of said funnel when said second plate is in said open position, a plunger alined vertically with said funnel and mounted to move downwardly and upwardly between raised and lowered positions, said plunger being located in said raised position and being located adjacent the upper end of said funnel when said funnel is in said receiving position, said plunger moving downwardly into said funnel when said plunger is moved to said lowered position, means for delivering product into the upper end of said funnel when said funnel is in said receiving position, means for thereafter moving said funnel downwardly to said depositing position, means for moving said second plate of said funnel to said open position as said funnel moves downwardly, and means for moving said plunger to said lowered position to shove said product out of said funnel and into the pouch in said filling station.



4,271,878
LIQUID TRANSFER DEVICE

Elvis Bologa, 146 Kennard Ave., Downsview, Canada M3H 4M5

Filed Oct. 31, 1977, Ser. No. 847,378
Int. Cl.² B65B *3/06*; B67C *9/00*
U.S. Cl. 141—375 **3 Claims**



1. The combination of: a device for use in draining ketchup and the like from a bottle having a neck defining a mouth; and a receptacle for receiving ketchup and the like drained from said bottle,

wherein the receptacle comprises a flat bottom wall, a sidewall extending upwardly from said bottom wall to a top edge, and an externally projecting annular rim which extends around said top edge;

and wherein the device comprises:

an upper portion of annular shape having an opening for receiving the neck of the bottle with the bottle in an inverted position;

a generally cylindrical skirt portion extending downwardly from the outer periphery of said upper portion,

a plurality of support legs depending from said skirt portion in spaced positions and arranged to support the device in stable equilibrium on a support surface with said upper portion of the device in an elevated position in which the bottle is held clear of the support surface so that said receptacle can be placed below the mouth of the bottle for receiving drained ketchup and the like;

a plurality of fingers each having an inner end portion coupled to said upper portion of the device and a free outer end portion, the fingers extending inwardly of the opening in said upper portion and being curved downwardly for engagement with the neck of said bottle, said fingers being resiliently flexible so that they can be deflected outwardly by the bottle, whereby the fingers exert an inward biassing effect against the neck of the bottle, and are capable of accommodating bottles of varying sizes;

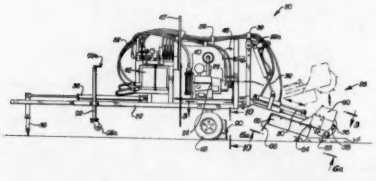
and wherein said skirt portion of the device is dimensioned so that said receptacle can be lifted into a storage position when the device is not in use, with said annular rim of the receptacle nested inside said skirt portion immediately below said upper portion, said skirt portion including a plurality of retaining elements projecting inwardly of said skirt portion of the device for engagement below said rim of the receptacle and arranged so that said annular rim of the receptacle can be forced over said retaining elements in bringing the receptacle into and from its storage position.

4,271,879

HYDRAULIC STUMP CUTTING AND DIGGING APPARATUS

Norman E. Shivers, Jr.; David E. Shivers, both of Los Angeles, and Paul N. Shivers, Alhambra, all of Calif., assignors to Deborah Shivers, Los Angeles, Calif.

Filed Feb. 21, 1979, Ser. No. 13,435
Int. Cl.³ A01G *23/06*
U.S. Cl. 144—2 N **38 Claims**



1. A hydraulic stump cutting and digging apparatus comprising in combination:

a mobile vehicle member having a main supporting frame;

a multidirectional telescopic channel frame cutter boom mounted on said main supporting frame, said cutter boom having an integral elongated channel which acts as a guide for controlling cut material;

a cutting wheel mounted on the cutter boom and longitudinally aligned with the channel for rotation about a horizontal axis transverse to said channel, said cutting wheel having a plurality of radially extending cutting teeth circumferentially mounted on the cutting wheel; and

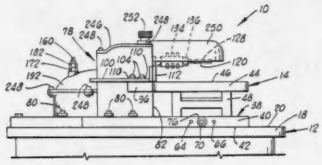
hydraulic drive means for powering said cutting wheel mounted contiguously with said cutting wheel and having a common axis for rotation to cut and to convey the cut material through said elongated channel to said cutter boom, said elongated channel and said cutting wheel with drive means being mounted on rotatably adjustable mounting means.

4,271,880

MULTIPLE PURPOSE WOODWORKING APPARATUS

William E. Leeper, Jr., 3405 S. Independence, Oklahoma City, Okla. 73119

Continuation of Ser. No. 855,663, Nov. 29, 1977, abandoned, and a continuation-in-part of Ser. No. 686,167, May 17, 1976, Pat. No. 4,060,112. This application Jan. 30, 1980, Ser. No. 116,944
Int. Cl.³ B27C *5/02*
U.S. Cl. 144—134 R **3 Claims**



1. A horizontal cutter assembly comprising: support means including a rotary power source;

first means having a base with horizontal bottom surface supportable on the top of said support means, and having housing means including bearing housing secured on one side of said base;

a workpiece supporting table having a horizontal top surface;

means for adjustably securing said workpiece supporting table over the opposite side of said first means base adjacent to said bearing housing and at a selected vertical spacing above the base of said first means;

a power output shaft horizontally journaled in rigid affixure on said first means bearing housing in disposition to extend horizontally over said workpiece horizontal top surface;

second means for drivingly interconnecting the rotary power source and said power output shaft to transmit rotational movement to said power output shaft; and

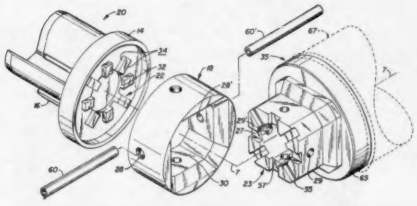
cutter means including a selected combination of spacing collars and shaper cutters secured on said power output shaft for horizontal rotation in selected disposition relative to said workpiece supporting table.

4,271,881

DRIVING INTERFACE FOR VENEER CHUCK ASSEMBLY

George F. Hitt, Arcata, Calif., assignor to Geurt Kreutzelman, Eugene, Oreg.

Filed Aug. 10, 1979, Ser. No. 65,660
Int. Cl.³ B27C *7/04*; B27L *5/00*
U.S. Cl. 144—209 R **6 Claims**



6. A chuck assembly mounted on the lathe spindle of veneer cutting lathe used to hold logs during veneer cutting operations comprising:

a spindle adapter having means for rigidly mounting said spindle adapter to the lathe spindle and a driving end;

a chuck driven by said spindle adapter having means for gripping the log and a driven end;

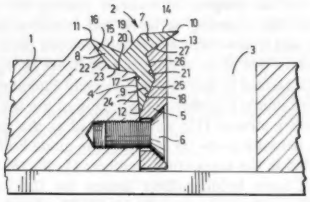
means for securing said chuck to said spindle adapter, said securing means being rigidly fixed to said driven end;
said securing means defining a circular aperture with splines formed therein;
said driving end being generally cylindrical with complementary spline slots for engagement with said splines whereby rotational force can be transmitted from said spindle adapter, through said securing means, to said chuck;
said driven end defining a chuck driving interface normal to the axis of rotation;
said driving end defining a spindle adapter driving interface normal to the axis of rotation; and
said driving interfaces so formed so that when said interfaces are juxtaposed, rotational driving force can be transmitted from the lathe spindle, through the spindle adapter, to the chuck whereby the log is rotated.

4,271,882

BLADE FOR A CUTTER FOR A CHIPPER OR SIMILAR WOOD REDUCING MACHINE

Antti T. Valo, PL 29, 08101 Lohja 10, Finland

Filed May 16, 1979, Ser. No. 39,626
Claims priority, application Finland, May 22, 1978, 781609
Int. Cl.³ B27G *13/08*
U.S. Cl. 144—241 **6 Claims**



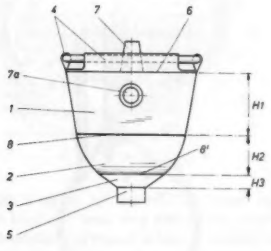
1. A blade for a cutter for a chipper or similar wood reducing machine, the blade defining equi-angularly spaced cutting edges separated by fastening surfaces, the blade having a three-horn cross-sectional shape resembling a star with the tips of the horns each forming a said cutting edge.

4,271,883

STORAGE ARRANGEMENT

Walter Krause, Am Schalkstein 11, 7121 Walheim, Wuertt., Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,258
Int. Cl.³ B65D *30/10*
U.S. Cl. 150—1 **7 Claims**



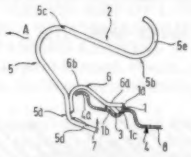
1. A storage container made from a unitary sheet of flexible material folded to form a body having a continuous periphery and further comprising an upper end and a lower end and a side wall extending therebetween and defining at said upper end a material inlet having a rectangular periphery and at said lower end a material outlet having a cylindrical periphery, said continuous periphery of said body decreasing peripherally from said upper end toward said lower end, said side wall having a geometric shape different from said upper end and said lower end and having an upper portion and a lower portion and an intermediate portion therebetween, said upper portion merging into said intermediate portion at a perimetric line formed therebetween, said intermediate portion merging into said lower portion at a perimetric line formed therebetween, said lower portion merging into said lower end and each of the portions converging in a direction downwardly towards said lower end with the angle of convergence being different in each portion, said upper portion forming a substantially conical periphery, said upper end having a height substantially smaller than the height of said upper portion; and means for suspending the container located at said upper end.

4,271,884

TIRE FITTING DEVICE

William S. Udall, and John Martin, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Filed Aug. 16, 1979, Ser. No. 67,107
Claims priority, application United Kingdom, Aug. 30, 1978, 34980/78
Int. Cl.³ B60C *25/00*
U.S. Cl. 157—1 **11 Claims**



1. A device for fitting a pneumatic tire to a wheel rim having an axial outer flange, an adjacent annular bead seat with an annular groove adjacent said bead seat and a central well of smaller diameter than said bead seat, said device comprising:
a handle and an elongate strip fixed to said handle;
said handle having an attachment portion for attaching said handle to one axial outer edge of a wheel rim;
a tire engaging portion to assist in locating a tire in a wheel rim well, said strip, when in position, being in overlying abutment relationship to an annular groove in said wheel rim to prevent a tire bead from engaging that groove prior to inflation of the tire.

4,271,885

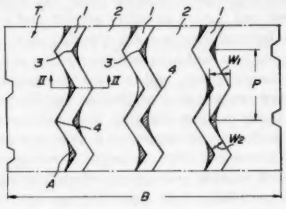
HEAVY DUTY PNEUMATIC RADIAL TIRE EXHIBITING LESS RAILWAY WEAR

Hiroyoshi Takigawa, Kodaira; Mitsuhisa Yahagi, Sayama, and Hiroshi Ogawa, Kodaira, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1978, Ser. No. 896,425
Claims priority, application Japan, Apr. 26, 1977, 52-90077[U]
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **2 Claims**

1. In a heavy duty pneumatic radial tire having a tread pattern formed in a tread divided into a plurality of circumferential ribs along a widthwise direction of tire by at least two zigzag grooves extending circumferentially of said tread, said tread being reinforced with a belt layer composed of metal cords, the improvement which comprises a width, amplitude and pitch of each said zigzag groove being 4.5 to 7.5%, 0.5 to 2.0% and 2.0 to 7.0%, respectively, based on a width of said

tread; each zigzag groove having a cross section in which a side wall is substantially 90° with respect to a tread outer



surface over a height from said tread outer surface corresponding to less than 30% of a depth of said zigzag groove.

4,271,886

TREAD FOR RADIAL TIRES OF TRUCKS AND SIMILAR VEHICLES

Willi Bachmann, Isernhagen; Klaus Thielemann, Hildesheim, and Klaus von der Wall, Wölpinghausen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,418

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844853

Int. Cl.[3] **B60C** *11/06*

U.S. Cl. 152—209 R **5 Claims**

1. A tire tread extending from shoulder to shoulder, especially for radial tires of trucks and similar vehicles, comprising in combination:

a circumferential lateral profile rib for each shoulder of said tire; and

a plurality of central circumferential profile ribs including four central profile ribs left free of any further subdivision to assure stability as well as being more durable to stand rigidly and located between said lateral profile ribs, said central profile ribs being separated from one another only by central grooves extending about the circumference of said tire in a wave pattern, said lateral profile ribs having a width of about two times the width of a central profile rib, with a lateral groove located between each of said lateral profile ribs and a pertaining adjacent central profile rib and extending about the circumference of said tire in a wave pattern, said lateral grooves having a width of about ½ the width of a central groove, said central profile ribs and said lateral profile ribs being arranged symmetrically to the circumferential tread center, said grooves and said central ribs extending in a regular zigzag pattern, the width of each of said lateral grooves corresponding to about 1 to 2% of the width of said tread, and the width of each of said central grooves corresponding to about 4 to 5% of the width of said tread, each of said central profile ribs having a width corresponding to about 8 to 13% of the width of said tread, said zigzag pattern having an amplitude "A" upwardly and downwardly along an edge of a pertaining groove corresponding to about 1 to 2% of the width of said tread, said pattern being repeated after a distance of about 18 to 25% of the width of said tread.

4,271,887

TIRE CHAIN

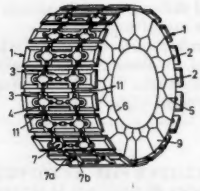
Dietmar H. Holzwarth, Vogelhofstr. 51, 7070 Schwäbisch Gmünd, and Hansjörg W. Rieger, Saarstrasse 48, 7080 Aalen, both of Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,585

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846909

Int. Cl.[3] **B60C** *27/00*

U.S. Cl. 152—220 **18 Claims**



1. A tire chain comprising supporting members which are disposed on the tread surface of the tire and which are held by a retaining network comprising lateral strands and transversely extending network parts, said transversely extending network parts being passed through passage apertures in the supporting members for the purpose of securely joining the supporting members to the retaining network and, between the passage apertures, said transversely extending network parts extending over the outer side of the supporting members facing the roadway, characterized in that said transversely extending network parts (3) are joined together in the region of the tire tread (16) by connecting strands (11) which as well as the transversely extending network parts (3) are guides in guide hollows (7,7*a*, 7*b*) provided in the supporting members (1, 10, 15, 19 and 21) and which form holding-down means for the longitudinal edges of the supporting members (1, 10, 15, 19 and 21) which are formed from flexible material and serve to enlarge the tread surface of the tire, the number of said supporting members in the region of the ground contact surface of the tire being sufficiently large such that at least three of said supporting members are in action at any one time.

4,271,888

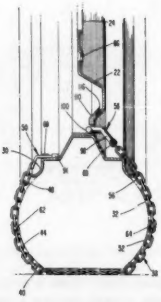
CLIP-ON SNOW CHAINS

Wade C. Robinson, 2001 Concord La., District Heights, Md. 20028

Filed Jan. 23, 1979, Ser. No. 5,850

Int. Cl.[3] **B60C** *27/00, 27/12*

U.S. Cl. 152—234 **10 Claims**



1. An assembly for enhancing vehicle traction comprising: a wheel having two sides, connection means for facilitating

attachment of the wheel to a vehicle, and bearing surface means for supporting the wheel on an underlying surface;

cross chain means for increasing traction between the bearing surface and the underlying surface, including first coupling means for connecting one end of the chain means to one side of the wheel and second coupling means for connecting a second end of the chain means to the other side of the wheel; and

the first coupling means including:

a lug defining a key, having a bottom surface mounted on the wheel, and having a tongue vertically spaced from the lug bottom surface and the wheel, and the tongue being directed away from the bearing surface, and

a socket member connected to the one end of the cross chain means, having a keyway conforming to the shape of the key and a thickness which allows the socket member to be slidably moved to a retaining position between the tongue and the wheel from a vertically aligned position of the key and keyway so as to retain the socket member relative to the wheel.

8. In a wheel having first and second sides, a periphery and operable to be supported on an underlying surface, an improved means for attaching traction enhancing chains to the wheel comprising:

a plurality of lugs circumferentially spaced around one side of the wheel, each lug being on a common radius and including a tongue spaced from the wheel and extending away from the periphery;

a corresponding plurality of radially extending slots circumferentially spaced around the wheel at a common radius, operable to retain one end of a cross chain; and

a corresponding plurality of retainer plates, each plate covering a portion of the corresponding slot and being mounted to the wheel by a spring hinge having sufficient resilience to hold the plate against the wheel when the slot is located above the wheel center.

4,271,889

TIRE WITH ASYMMETRIC RADIAL CARCASS EMPLOYING BLOCKS TO LIMIT CARCASS SWING AND CARCASS EXPANSION

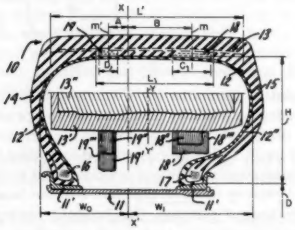
Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,108, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,026

Claims priority, application France, Mar. 10, 1978, 78 07390

Int. Cl.³ B60C *9/08, 9/20*

U.S. Cl. 152—353 R **35 Claims**



1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement of slight meridian curvature which is parallel to the radial carcass reinforcement along a zone of a width less than or equal to that of the tread reinforcement and formed of at least two superimposed plies of wires or cables parallel in each ply and crossed from one ply to the other forming angles at most equal to 45° with the longitudinal direction of the tire, the maximum axial distance of the radial carcass reinforcement from the median plane of the beads being greater for one sidewall than for the other sidewall of the tire, the tire being mounted on a rim and inflated but not under load, characterized by the fact that parallel to the radial carcass reinforcement and between the radial carcass reinforcement and the tread reinforcement there are arranged a swing-limiting block and an expansion-limiting block which are each formed of at least one ply of wires or cables of low extensibility parallel to the longitudinal direction or preferably each formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-half of the smallest angle used in the tread reinforcement, the longitudinal median axis of the swing-limiting block being located axially on the side of the median plane of the beads of the tire corresponding to the sidewall in which the radial carcass reinforcement reaches its greatest maximum axial distance from the median plane of the beads, the longitudinal median axis of the expansion-limiting block being located axially on the side of the median plane of the beads corresponding to the sidewall in which the radial carcass reinforcement reaches its smallest maximum axial distance from the median plane of the beads and further characterized by the fact that the wires or cables of the limiting blocks, which are preferably of steel, have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

4,271,890

RADIAL CARCASS TIRE OF LARGE WIDTH EMPLOYING TWO AXIALLY-SPACED CARCASS EXPANSION LIMITING BLOCKS

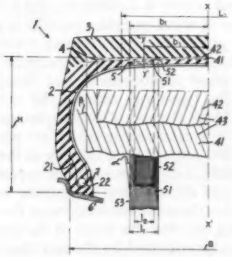
Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,183, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,029

Claims priority, application France, Mar. 10, 1978, 78 07389

Int. Cl.³ B60C *9/08, 9/20*

U.S. Cl. 152—352 R **17 Claims**



1. A tire having a ratio H/B at most equal to 0.75, H being the radial height of the tire on its rim and B the maximum axial width of the tire, with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement of slight meridian. curvature which is parallel to the radial carcass reinforcement along an equatorial zone and formed of at least two superimposed plies of wires or cables parallel in each ply and crossed from one ply to the other forming angles at most equal 30° with the longitudinal direction of the tire, characterized by the fact that between the radial carcass reinforcement and the tread reinforcement there are arranged two limiting blocks parallel to the radial carcass reinforcement and in two zones spaced from the equatorial plane of the tire and included within the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement, each limiting block being arranged along one of said two zones and each limiting block being formed of two

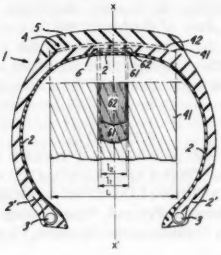
superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-half of the smallest angle used in the tread reinforcement and wherein the wires or cables of low extensibility of the limiting blocks have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

4,271,891

RADIAL CARCASS TIRE EMPLOYING CARCASS EXPANSION LIMITING BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,130, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,036
Claims priority, application France, Mar. 10, 1978, 78 07384
Int. Cl.[3] **B60C** *9/08, 9/20*
U.S. Cl. 152—352 R **13 Claims**



1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement which is arranged directly below the tread and which is parallel to the radial carcass reinforcement at least along an equatorial zone and which is a block formed of at least two superimposed plies of wires or cables parallel in each ply and crossed from one ply to the other forming acute angles with the longitudinal direction of the tire, characterized by the fact that between the tread reinforcement and the radial carcass reinforcement in the equatorial zone of the tire there is arranged a limiting block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than the smallest angle used in the tread reinforcement, the width of the limiting block being less than the width of the tread reinforcement, and further characterized by the fact that the width of the limiting block is between 100% and 60% of the width of the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement and wherein the wires or cables of low extensibility of the limiting block have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

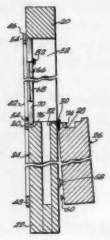
4,271,892

CONVERTIBLE DOOR STRUCTURE

H. Donald Brusseau, and Louvain M. Brusseau, both of 1803 SE. 45th St., Cape Coral, Fla. 33904

Filed Jan. 29, 1979, Ser. No. 7,385
Int. Cl.[3] **E06B** *3/32*
U.S. Cl. 160—92 **2 Claims**

1. A door for hinged mounting to a door frame including side stile members, top end bottom cross rails, a lower fixed panel portion, an upper panel portion hinged along a lower edge thereof to a top edge of said lower panel portion for swinging movement between first and second positions, an opening in an upper portion of the door, above said lower panel portion, sized to receive said upper panel portion in a closing relation thereto in said first position, a top opening vertically extending pocket interiorly of said lower panel portion to receive a screen structure, sized for fitted reception in said opening when said upper panel portion is swung out of



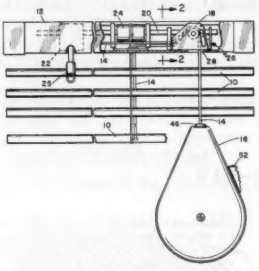
said first position to said second position comprising a depending position against an inside face of said lower panel, said pocket being sized to permit a top edge portion of said screen to project upwardly outwardly thereof to a predetermined extent and a bottom edge of said upper panel portion is longitudinally grooved to receive said top edge portion when said upper panel portion is in said first position.

4,271,893

WINDOW BLIND CORD CONTROL APPARATUS

William A. McCluskey, 1199 E. Madison Ave., El Cajon, Calif. 92021

Filed Mar. 26, 1979, Ser. No. 23,539
Int. Cl.[3] **E06B** *9/38*
U.S. Cl. 160—178 R **6 Claims**



1. Cord control apparatus for a window blind having an elongated headrail, a plurality of spaced slats suspended below the headrail, tilt control means coupled to the slats for controlling the tilt thereof, with a tilt control rod extending longitudinally in the headrail, a plurality of cords secured to the lowermost slat and passing through the slats into the headrail at a longitudinally spaced position, the headrail having an exit opening adjacent one end, said cords extending along the headrail and collectively through said opening, locking means adjacent said opening through which the cords pass for selective frictional locking, the cord control apparatus comprising:

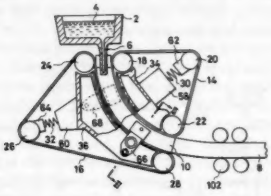
a headrail comb mounted adjacent the locking means with a plurality of spaced slots for receiving and guiding the cords separately into the locking means,

said headrail comb being a substantially U-shaped element having a pair of end walls and a connecting wall, the end wall being spaced to straddle said locking means and retain the comb against longitudinal displacement in the headrail, said slots being in one of said end walls.

4,271,894
CONTINUOUS CASTING APPARATUS

Tomoaki Kimura, and Tadashi Nishino, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,428
Claims priority, application Japan, Jun. 29, 1978, 53/79664; Mar. 16, 1979, 54/29893
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—87 **13 Claims**



1. A continuous casting apparatus, including:

a mold defined by a pair of members having opposed side ends curved with a common curvature and parallel with each other to form casting wall surfaces of short latus sides of the cast piece, a first and a second flexible endless belts substantially touching the curved parallel ends of said members, means for rotating said belts in synchronism with each other, said first flexible endless belt forming one convex casting wall surface of long latus side of the cast piece, and said second flexible endless belt forming the other concave casting wall surface of long latus side of the cast piece.

12. A continuous casting method, comprising the steps of:

providing a mold defined by a pair of members having opposed side ends curved with a common curvature and parallel with each other to form casting wall surfaces of short latus sides of the cast piece;

providing a first and a second flexible endless belts substantially touching the curved parallel ends of said members;

rotating said belts in synchronism with each other;

forming one convex casting wall surface of long latus side of the cast piece with said first flexible endless belt and simultaneously forming the other concave casting wall surface of the long latus side of the cast piece with said second flexible endless belt, with both said steps of forming occurring during said step of rotating;

sealing opposite edges of each of said belts with said members by said touching along the full length of said casting walls to form a substantially sealed tubular mold having an entrance end and an exit end for the cast piece; and

pouring molten steel into said entrance end to substantially fill the mold with steel continuously during said steps of rotating and forming to continuously produce an at least partially solidified cast piece of steel from the exit end of said mold.

4,271,895
AUTOMATIC PART LOADER UNIT FOR MULTI-CAVITY ROTOR DIE AND METHOD OF OPERATION

James C. Cole, Galion, and George F. Cronenwett, Mount Gilead, both of Ohio, assignors to HPM Corporation, Mount Gilead, Ohio

Filed Jan. 28, 1980, Ser. No. 115,770
Int. Cl.³ B22D *17/00, 19/04*
U.S. Cl. 164—109 **20 Claims**

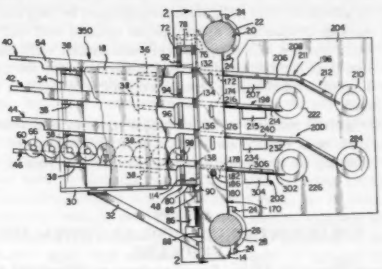
14. A method for loading preformed parts in a die casting machine and incorporating the parts in castings comprising:

providing a die cavity and parts-receiving chamber continuously in communication therewith having a transverse breech opening therein,

loading a plurality of the preformed parts in a magazine,

moving one part at a time by gravity from the magazine through an escapement mechanism and onto an inclined guide track,

moving said one part down the inclined track toward and



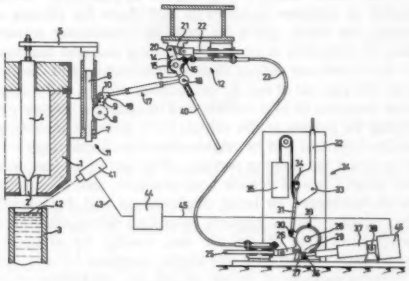
through the breech opening into the parts-receiving chamber and then into the die cavity, and

then introducing molten metal into the cavity to and around at least a portion of the part so loaded.

4,271,896
DEVICE FOR REGULATING THE FLOW THROUGH A PLUG OF A DISPENSING VESSEL IN A CONTINUOUS CASTING INSTALLATION, USING THE LEVEL OF THE METAL BATH IN THE RECEIVING INGOT MOLD

Robert Becus, Ennery, France, assignor to Societe des Aciers Fins de l'Est, Hagondange, France

Filed Jun. 25, 1979, Ser. No. 51,648
Claims priority, application France, Jun. 28, 1978, 78 19391
Int. Cl.³ B22D *11/10, 11/16, 39/00, 41/10*
U.S. Cl. 164—449 **6 Claims**



1. In a continuous casting installation comprising a ladle having wall portions defining a ladle orifice through which molten metal is poured into a continuous casting mold, a bottstick carrying a bottstick plug associated with said ladle orifice for controlling the flow of metal from said ladle and an electronic optical device for sensing the level of the metal in the mold, a device for controlling the position of said bottstick plug relative to said orifice in response to the level of metal in said mold, said device comprising:

mechanical reduction means connected to said bottstick for regulating the position of said bottstick plug relative to said ladle orifice;

a purely mechanical control means adjacent said ladle and associated with said mechanical reduction means for controlling said mechanical reduction means;

rapid coupling means connected to said purely mechanical control means for connecting said mechanical reduction means to said purely mechanical control means;

mechanical remote control transmission means connected to

said purely mechanical control means for actuating said purely mechanical control means;

a remote control console means, comprising both a main manual control and a servo-jack control operating in response to level indications transmitted by said electronic optical device, said main manual control and said servo-jack control being operatively associated with said mechanical remote control transmission means for controlling said mechanical remote control transmission means, and

emergency manual control means operatively associated with said purely mechanical control means for acting directly on said purely mechanical control means.

4,271,897
AIR CONDITIONING DISPLAY SYSTEM FOR VEHICLES

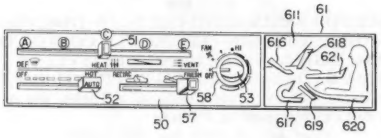
Minoru Tatemoto, Ohbu, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1978, Ser. No. 882,255

Claims priority, application Japan, Jun. 29, 1977, 52-84809[U]; Sep. 5, 1977, 52-118443[U]; Jan. 17, 1978, 53-3452

Int. Cl.³ F28F *27/00*

U.S. Cl. 165—11 R **3 Claims**



1. An air conditioning display system for a vehicle comprising a vehicle's air conditioner proper including at least a plurality of air intake ducts, a plurality of air discharge ducts, a plurality of dampers disposed in said ducts for closing and opening said ducts, and a fan unit, air conditioner actuating means for actuating at least said dampers and said fan unit in said air conditioner proper thereby introducing and discharging air into and out of said air conditioner proper, and a display device mounted in said vehicle and including a display panel carrying the picture of the vehicle body portions including at least the front seat and its neighborhood for displaying on said display panel the flowing patterns of air out of said air conditioner proper at said vehicle body portions, said flowing patterns of discharged air being displayed on said display panel with strip-like display patterns extending substantially in the flowing directions of the air and having no arrowhead, wherein each of said strip-like display patterns for displaying the flowing patterns of air out of said air conditioner proper has a width increased gradually in the direction of air flow.

4,271,898
ECONOMIZER COMFORT INDEX CONTROL

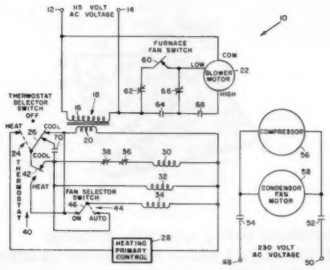
Edward M. Freeman, 3214 Leyte Dr., San Antonio, Tex. 78217

Continuation-in-part of Ser. No. 810,052, Jun. 27, 1977, Pat. No. 4,167,966. This application May 7, 1979, Ser. No. 36,514

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—16 **6 Claims**

1. In a home type heating and cooling system having a blower motor with at least two speeds, a common terminal of said blower motor being connected to a first side of a line voltage, stepped-down transformer means for reducing said line voltage to thermostat control means which includes a thermostat selector switch operatively connected to a secondary winding of said stepped-down transformer, a thermostat operatively connected to said thermostat selector switch to indicate if heating or cooling is desired, a fan selector switch having automatic and ON positions and being connected to said secondary winding, contactor relay means energized by said secondary winding via said thermostat and said thermostat selector switch if both call for cooling thereby connecting a compressor means and condenser fan means to said line voltage, heating control means connected to said thermostat selector switch to operate furnace means for heating if said thermostat and said thermostat selector switch call for heating, evaporator fan relay means connected to said fan selector switch and said secondary winding, the improvement comprising:



economizer control relay coil means connected to said secondary winding and said thermostat for energization if said thermostat and said thermostat selector switch both call for cooling, said economizer control relay coil means switching said blower motor from low speed to high speed if said fan selector switch is in said ON position, and means in combination with said economizer control relay coil to control relative humidity in a conditioned air space.

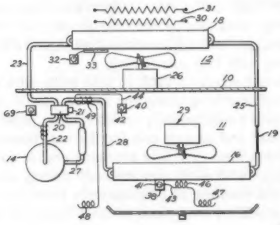
4,271,899
HEAT PUMP CONTROL SYSTEM

Joseph R. Noland, Crestwood, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 27, 1980, Ser. No. 134,355

Int. Cl.³ F25B *29/00;* **F25D** *21/02*

U.S. Cl. 165—29 **1 Claim**



1. In a self-contained air conditioning unit for heating and cooling an enclosure, a refrigerant circuit including an outdoor heat exchanger and indoor heat exchanger, a compressor, a reversing valve for selectively connecting said compressor to said heat exchangers whereby said outdoor heat exchanger functions as an evaporator during operation of said unit on the heating cycle and said indoor heat exchanger functions as an evaporator during operation of said unit on the cooling cycle, fan means for moving enclosure air through said indoor heat exchanger, fan means for moving outdoor ambient air through said outdoor heat exchanger, an air conditioner heating cycle control system comprising:

a supplemental and secondary heat means arranged in air flow relationship with said indoor heat exchanger;

a thermostat, including a first-stage switching means, operable for controlling operation of said compressor and said secondary heat means in said heating cycle for maintaining the temperature of said enclosure within a selected

temperature range, and a second stage switching means operable when the temperature of said enclosure drops below said selected temperature range for energizing said supplemental heating means while said compressor is operating through said first-stage switching means;

a first frost control means including a sensing element having one portion being exposed to the surface temperature of said outdoor heat exchanger and a second portion being exposed to the drain area temperature, switch means under control of said portions including a first switch position for maintaining operation of said compressor in the heating cycle when drain area and said outdoor heat exchanger surface temperature sensed by said portions are above a preselected frost accumulation level and a second switch position operable when either of said portions senses a preselected frost accumulation level to de-energize said compressor and for energizing said secondary heat means through said first-stage thermostat switch means so that the temperature of air passing through said indoor heat exchanger is maintained at a preselected temperature by said secondary heat means when said compressor is de-energized; and

a second frost control including a sensing element having one portion being exposed to the surface temperature of a portion of said refrigerant circuit and a second portion being exposed to said ambient outdoor temperature, switch means under control of said portions for maintaining operation of said outdoor fan independent of said first control when both ambient and the line surface temperature sensed by said portions are above a frost accumulation temperature and to complete a circuit to said fan through said first control if either of the portions of said second control senses a preselected frosting temperature to de-energize said outdoor fan when said compressor is de-energized.

4,271,900

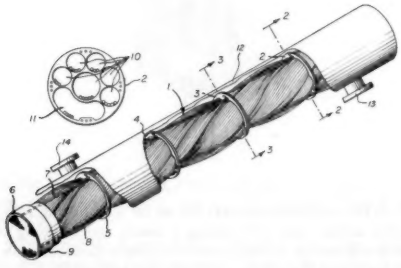
APPARATUS WITH EXPANDABLE TUBE BUNDLE

Charles F. Reitz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 28, 1978, Ser. No. 920,122

Int. Cl.³ F28D *7/10*; F28F *9/00*

U.S. Cl. 165—162 **10 Claims**



1. In an apparatus comprising in combination an elongated bundle of flexible, relatively small diameter, thin walled, hollow, polymeric, tubular elements and a housing means therefor extending the length of said bundle, said bundle comprising a plurality of said tubular elements with open terminal portions and a lateral dimension securing means for the plurality of said tubular elements cooperating with the terminal portions of said tubular elements, said housing means entirely surrounding said elongated bundle and defining a zone for fluid passage around said bundle, said housing having inlet and outlet means and means for securing itself to said lateral dimension securing means in a fluid tight arrangement therewith, the length of said housing is selected and determined by the length of the elongated bundle, the improvement wherein the tubular elements in each bundle are of various lengths that range from 0.1–1.0 inch per foot of bundle length, said tubular elements forming an elongated bundle set in a twisted configuration, said twist amounting to from 1°–25° per foot of bundle length as measured by the angle of turn that the tubes in one terminal portion of the bundle are to the tubes in the other terminal portion the tube bundle having a length 0.5–5% greater than the housing length, said tubular elements passing through holes in circular spacers positioned substantially perpendicular to the tubular elements, having a cross sectional area substantially equal to the inside cross sectional area of the housing, further including a plurality of holes through which a portion of said tubular elements pass and an area of 20% or more of the inside cross sectional area of the housing defining one opening through which a portion of said tubular elements pass, the number of tubes passing through each hole or the opening ranging from 1–100, means for positioning said spacers at intervals of from 6–30 inches apart and wherein each spacer is rotated from 45°–315° C. with respect to the adjacent spacers.

4,271,901

OIL COOLER FOR AN INTERNAL COMBUSTION ENGINE

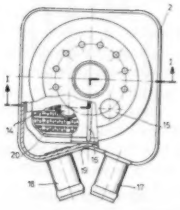
Günter Buchmüller, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,493

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843423

Int. Cl.³ F28F *3/10*

U.S. Cl. 165—165 **9 Claims**



1. An oil cooler for an internal combustion engine comprising:

a housing having an axis;

an axially disposed center fixing tube extending through said housing;

a plurality of plate-like oil chambers within said housing, each said oil chamber being formed by a pair of oppositely profiled cooling plates and being spaced apart axially along said fixing tube, the space between said oil chambers forming cooling channels for a coolant;

oil inlet means extending parallel to said fixing tube for supplying oil directly to all said oil chambers;

oil outlet means extending parallel to said fixing tube for discharging oil directly from all said oil chambers, wherein said oil inlet means and said oil outlet means, in cross-section, lie along radii from the central axis of said fixing tube which are at a first acute angle relative to one another;

partition means in said oil chambers extending radially in the acute angular space between said oil inlet means and said oil outlet means for directing oil supplied to said oil cooler tangentially around said fixing tube toward said outlet means;

coolant inflow means for introducing a coolant through a first opening in said housing into the cooling channels between said oil chambers; and

coolant outflow means for exhausting coolant through a second opening in said housing, said outflow means being

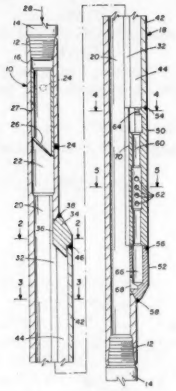
offset axially relative to said coolant inflow means, wherein said first and second openings lie along radii from said central axis which are at a second acute angle relative to one another for causing coolant introduced into said housing to flow through said cooling channels tangentially, and wherein said coolant inflow and outflow means and said oil inlet and outlet means are arranged relative to each other for causing oil and coolant introduced into said oil cooler to flow in opposite directions.

4,271,902

SELF-DISCRIMINATING SIDE POCKET MANDREL AND METHOD OF MANUFACTURING SAME

Howard H. Moore, Jr., Weimar, Tex., assignor to Perry R. Bass, Inc. and Sid W. Richardson Foundation, both of Fort Worth, Tex., part interest to each

Filed Jul. 27, 1979, Ser. No. 61,417
Int. Cl.[3] E21B *23/03, 23/12, 43/12;* **F04F** *1/20*
U.S. Cl. 166—117.5 **31 Claims**



6. A side pocket mandrel for connection in well tubing, comprising in combination:

a cylindrical body with a cylindrical wall defining an axial main bore of circular cross section and predetermined diameter extending through the length of said body;

said body including a longitudinal slot through the wall thereof having a length less than the length of said body and having a width substantially less than the diameter of the main bore;

tubular side pocket means welded to said body over the slot for receiving a pocket device;

said side pocket means having an axial side bore therein of circular cross section and predetermined diameter substantially equal to the width of slot in said body, the side bore being defined by a semi-cylindrical wall with a longitudinal slot therein aligned with the slot in said body for access between the side bore and the main bore; and

means secured to said body for sealing the ends of said pocket means.

18. A method of manufacturing a side pocket mandrel from three sections of cylindrical metal tubing, the first section of tubing having an internal diameter to receive a well string and the second and third sections of tubing each having a smaller internal diameter of a size to receive side pocket devices therein, comprising the steps of:

(a) forming in said first section of tubing a longitudinal slot having a predetermined width narrower than the internal diameter of said first section of tubing but no wider than the internal diameter of said second and third sections of tubing, and having a shorter axial length than said first section of tubing;

(b) forming in said second section of tubing a longitudinal slot of a width corresponding to the width of the slot in said first section of tubing;

(c) forming in said third section of tubing an internal side pocket subassembly for receiving pocket devices;

(d) forming an external portion of said third section of tubing to fit into the slot of said first section of tubing and substantially match the internal diameter thereof;

(e) positioning said third section of tubing in the lower end of the slot in said first section of tubing;

(f) positioning said second section of tubing above said third section of tubing and over the upper end of the slot in said first section of tubing with the slots therein aligned to provide communication between the interiors of said first and second tubing sections;

(g) interconnecting said first, second and third sections of tubing by welds;

(h) closing the upper end of said second tubing section; and

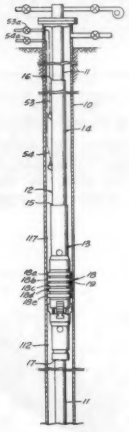
(i) forming coupling means on the ends of said first tubing section of a size and shape to allow connection of said mandrel to a tubing string.

4,271,903

RETRIEVABLE ANNULUS AND TUBING FLOW CONTROL VALVES

Grady M. Slagle, Jr., and Donald O. Thomas, Jr., both of Long Beach, Calif., assignors to Coalinga Corporation, Long Beach, Calif.

Filed Apr. 13, 1979, Ser. No. 29,855
Int. Cl.[3] E21B *33/128, 34/10*
U.S. Cl. 166—129 **2 Claims**



1. A flow control assembly for an oil well having two production zones, said well having a casing and a tubing string within said casing defining a casing annulus therebetween, and packing means for packing off between said tubing string and said casing to isolate said production zones, the improvement comprising:

a valve housing and a packer housing connected in series in said tubing string, said valve housing including a pair of fluid conducting control lines extending from the surface, said valve housing having a first landing means therein, said packer housing having packing means and lateral ports situated above and below said packing means;

a first valve removably positioned in said first valve housing landing means, said first valve including tubular means disposed adjacent said packing means, said tubular means forming a flow passage communicating the lateral ports above and below said packing means thereby bypassing said packing means, said tubular means having a piston

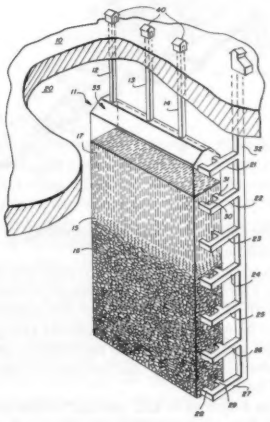
structure for receiving fluid pressure from one of said control lines, said tubular means being thereby vertically reciprocal for selectively opening or closing said lateral ports to alter the flow of production fluid in the annulus, said first valve means further including second landing means therein;

a second valve removably positioned in said first valve and received therein in said second landing means, said second valve having a piston structure movable vertically within said first valve and having a piston surface for receiving fluid pressure from the second of said control lines for imparting vertical movement to said piston structure, said second valve means including a closure element actuated by said piston structure for altering the flow of production fluid within said tubing string.

4,271,904
METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,181
Int. Cl.³ E21B *43/247*
U.S. Cl. 166—251 **2 Claims**



1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising

(a) monitoring the extent and movement of said flame front to determine the location of one or more segments of the flame front which exhibit unfavorable combustion characteristics by using the Coil Method, which comprises

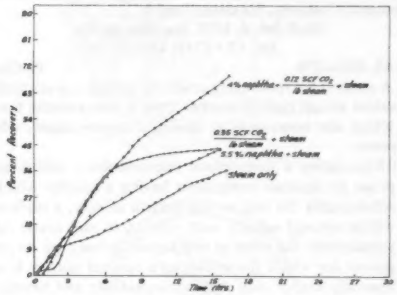
providing at least one stationary multi-turn coil of wire on the surface of the ground electrically connected into one or more circuits in which an electrical resonance condition is established, continuously monitoring the change in impedance characteristics in one or more of said circuits as the combustion progresses, and providing an indication of the location, speed, and vertical and lateral movement of said flame front in response to said monitored change in impedance characteristic, and

(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to control and optimize the combustion in said segment.

4,271,905
GASEOUS AND SOLVENT ADDITIVES FOR STEAM INJECTION FOR THERMAL RECOVERY OF BITUMEN FROM TAR SANDS

David A. Redford, Fort Saskatchewan, and Mohsen R. Hanna, Calgary both of Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Feb. 21, 1979, Ser. No. 13,551
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—263 **14 Claims**



1. In a recovery process wherein hot fluid is injected into a heavy oil reservoir through a well and formation fluids, including reservoir and injected fluids, are produced either through an adjacent production well or by backflowing the injection well,

the improvement comprising:

injecting into the reservoir, at temperature and pressure greater than the formation temperature and pressure, an injection stream consisting essentially of steam, hydrocarbon diluent, and a gas, said diluent being chosen and provided in amount so as to dissolve in the heavy oil at formation temperature without vaporizing, said gas being gaseous at formation temperature and pressure and soluble in the formation fluids at the injection pressure;

terminating pressurized injection; and then

producing by pressure drawdown a stream of reservoir and injected fluids.

4,271,906
OIL RECOVERY METHOD EMPLOYING ALTERNATE SLUGS OF SURFACTANT AND FRESH WATER SOLUTION OF SACRIFICIAL AGENT

Issam S. Bousaid, and Benny K-C Ho, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,147
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **33 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing, permeable formation penetrated by at least one injection well and by at least one production well, said formation containing water having a salinity in excess of about 20,000 parts per million total dissolved solids, including known or determinable divalent ion concentration, comprising injecting into the formation a predetermined volume of an aqueous saline surfactant fluid, said surfactant being slightly soluble in a fluid having a salinity of from 50 to 100 percent of the salinity of the water present in the formation, and reducing interfacial tension between the petroleum and water to a value less than 100 millidynes/centimeter, said surfactant fluid being injected by the injection well and displacing petroleum in the formation toward the production from which it is recovered to the surface of the earth, wherein the improvement comprises:

injecting the surfactant fluid into the formation in from 2 to 15 separate slugs, and separating successive slugs of surfactant fluid from one another by injecting sequentially

therewith, separate isolation slugs of fluid consisting of fresh water having salinity less than 10,000 parts per million total dissolved solids, and having dissolved therein from 0.1 to 10.0 percent by weight of a sacrificial agent.

4,271,907

MICROEMULSIONS WHICH COMPATIBLY INCORPORATE VISCOSIFIERS AND THEIR USE IN ENHANCED OIL RECOVERY

Walter W. Gale, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,380
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—274 **11 Claims**

1. A method for recovering crude oil having a characteristic equivalent alkane carbon number from a subterranean formation which also contains brine having a known salinity which comprises:

(a) formulating a single-phase microemulsion which comprises an aqueous component having a salinity which is substantially the sme as said known salinity, a surfactant whose optimal salinity with respect to said crude oil is substantially the same as said known salinity, an oil component for which the surfactant's optimal salinity is substantially higher than said known salinity and having an equivalent alkane carbon number which is from about 25% to about 300% greater than that of said crude oil, and a water soluble polymeric viscosity-increasing agent; and

(b) injecting said microemulsion into said subterranean formation to recover crude oil.

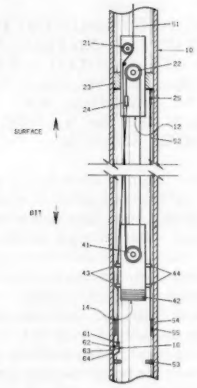
4. The method of claim **1** which includes preflushing and formation with an aqueous salt solution to result in said known salinity.

4,271,908

TRACKED CABLE GUIDE ASSEMBLY AND METHOD FOR STORING CONDUCTOR CABLE INSIDE A DRILL PIPE

Leon H. Robinson, Jr.; Adelbert Barry, and Jerry M. Speers, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 29, 1980, Ser. No. 116,517
Int. Cl.[3] E21B *17/00, 47/12*
U.S. Cl. 166—315 **7 Claims**



1. A method to store an electrical conductor in a drill pipe which comprises the steps of:

(a) attaching an elongated member along the inside of the drill pipe;

(b) extending the electrical conductor cable from a subsurface location up to and around an upper cable guide, down to and around a lower cable guide, and up to the surface;

(c) mounting the upper cable guide in the drill pipe;

(d) tensioning the portion of cable which extends from the subsurface location to the upper cable guide and maintaining the portion of the cable in tension; and

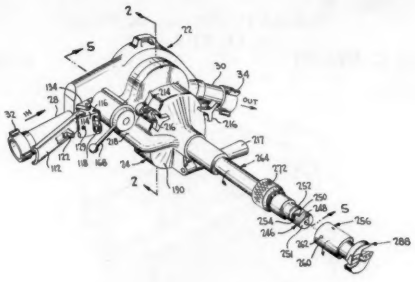
(e) paying out cable from the surface so that the lower cable guide lowers in the drill pipe to store excess conductor cable in an overlapped configuration, the axial motion of the lower cable guide being tracked on the elongated member and the tensioned portion of the cable which serve as a guide tracks to impede rotation of the lower cable guide relative to the upper cable guide and to the drill pipe.

4,271,909

MODULAR FIRE FIGHTING APPARATUS

John F. Chatfield, Jr., Easton, Conn.; Donald C. Bryant, Palm Harbor; James C. Daly, Clearwater, both of Fla., and Friedolf Kamila, Long Meadow, Mass., assignors to American Fire and Industrial Products Company, Tampa, Fla.

Filed Dec. 18, 1978, Ser. No. 970,110
Int. Cl.[3] A62C *31/22*
U.S. Cl. 169—70 **35 Claims**



1. Modular fire fighting apparatus comprising

a power module including

a housing having a coupling face, a supply inlet for receiving fluid, a turbine chamber, discharge means communicating with said turbine chamber for exhausting fluid from said housing, an outlet positioned along said coupling face, and passage means establishing communication between said supply inlet and said turbine chamber and said outlet,

valve means disposed in said passage means for controlling fluid flow to said turbine chamber and said outlet, and

turbine means disposed in said housing having an impeller rotatably mounted in said turbine chamber for rotation by fluid flow in said turbine chamber, and a drive shaft secured to said impeller for rotation therewith and extending through said coupling face;

a penetrating and extinguishing tool module including

a housing having a coupling face for abutment against said coupling face of said power module housing, and an inlet for alignment with said outlet of said power module housing,

a driven member rotatably mounted in said penetrating and extinguishing tool module housing to extend through said coupling face,

coupling means for releasable rectilinear engagement of said driven member coaxial with said drive shaft,

a penetrating tool mounted on said penetrating and extinguishing tool module housing, and

drive means coupling said driven member with said penetrating tool to drive said penetrating tool; and

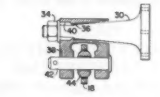
securing means for releasably mounting said penetrating and extinguishing tool module on said power module with said coupling face of said penetrating and extinguishing tool module housing in abutment against said coupling face of said power module housing to position said inlet of said penetrating and extinguishing tool module housing in communication with said outlet of said power module housing and to engage said driven member with said drive shaft whereby said penetrating and extinguishing tool module can be simply installed on sand removed from said power module.

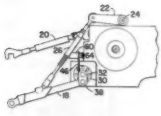
4,271,910

DRAFT SENSING DEVICE INCLUDING LOAD PIN WITH FREE END

Richard A. Schafer, Traer, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 2, 1979, Ser. No. 53,913
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **14 Claims**





13. A draft load sensor for sensing draft loads in a draft link on a tractor having a tractor body, the sensor comprising:

a load pin having a free end and a fixable end spaced transversely from the free end, the fixable end having securing means for rigidly securing the load pin to the tractor body, the securing means for securing the load pin to the tractor body only at its fixable end;

a load arm rigidly secured to the free end of the load pin;

a draft link pivotally connected to the load arm and extending rearwardly therefrom; and

means coupled to the load arm movable in response to rearward bending and torsional distortion of the load pin caused by draft loads on the draft link, such movement being representative of the draft loads.

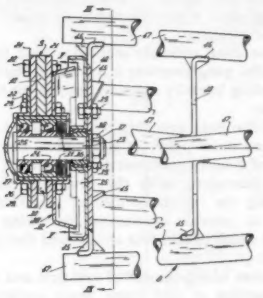
4,271,911

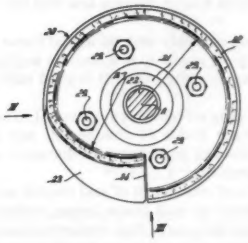
SOIL CULTIVATING MACHINES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jun. 22, 1979, Ser. No. 51,129
Claims priority, application Netherlands, Jun. 22, 1978, 7806736
Int. Cl.³ A01B *33/06*
U.S. Cl. 172—68 **20 Claims**

1. A soil cultivating machine comprising a frame with cultivating means on said frame, at least one elongated roller connected to the frame at the rear thereof and said roller being positioned to provide support for said frame, the outer ends of said roller being journalled to arms with bearing means and said arms being connected to said frame, a screening hood surrounding said bearing means adjacent at least one end of said roller, said hood being dished and comprising an internal scraping element, said scraping element forming part of a profiled wall of said hood and said wall spiraling inwardly from an outer periphery of the hood, a screen on said one end of the roller and said screen being positioned adjacent said outer hood periphery, said hood, including said scraping element, being held stationary to cooperate with the rotating





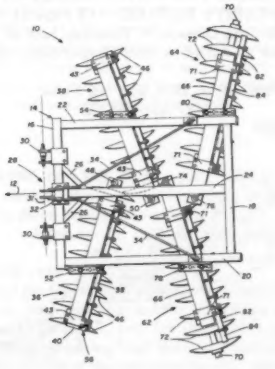
roller screen, whereby dirt is conducted out of the hood and away from said bearing means during operation.

4,271,912

DISC HARROW

John V. Frye, Dallas County, Tex., assignor to Ag-Team, Inc., Rowlett, Tex.

Continuation of Ser. No. 953,796, Oct. 23, 1978, abandoned. This application May 30, 1980, Ser. No. 154,922
Int. Cl.³ A01B *59/043*
U.S. Cl. 172—441 **12 Claims**



1. A disc harrow, comprising:

a rigid frame;

3-point hitch means for pivotally connecting said frame to a tow vehicle, said hitch means including a pair of shackles and an upstanding post located between the shackles;

a first disc gang assembly secured to said frame in a position

angling forward and extending laterally outward one side of said frame;

said first disc gang assembly being secured to said frame at inner and outer points of attachment, and including a plurality of discs of predetermined diameters mounted at intervals therealong;

a second disc gang assembly secured to said frame behind said first disc gang assembly in a position angling forward and extending laterally outward beyond the other side of said frame;

said second disc gang assembly being secured to said frame at inner and outer points of attachment, and including a plurality of discs of predetermined diameters mounted at intervals therealong with the innermost disc laterally overlapping the innermost disc of said first disc gang assembly to provide continuous harrowing across the combined width of said first and second disc gang assemblies;

the inner points of attachment of said first and second disc gang assemblies to said frame being vertically aligned with the rotational axes of their respective discs and longitudinally spaced apart a distance less than one disc diameter;

a third disc gang assembly secured to said frame behind said second disc gang assembly in a position angling rearward and extending laterally outward beyond said one side of said frame;

said third disc gang assembly being secured to said frame at inner and outer points of attachment, and including a plurality of discs of predetermined diameters mounted at intervals therealong;

the inner points of attachment of said second and third disc gang assemblies to said frame being vertically aligned with the rotational axes of their respective discs and longitudinally spaced apart a distance less than one disc diameter;

a fourth disc gang assembly secured to said frame behind said third disc gang assembly in a position angling rearward and extending laterally outward beyond said other side of said frame; and

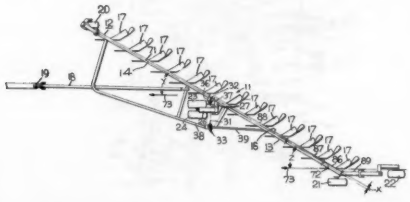
the inner points of attachment of said third and fourth disc gang assemblies to said frame being vertically aligned with the rotational axes of their respective discs and longitudinally spaced apart a distance less than one disc diameter.

4,271,913

ARTICULATED PLOW WITH HORIZONTAL ANGULARITY BETWEEN ITS FRAMES

Keith A. Wheeler, and Dawson W. Hastings, both of La Porte, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 2, 1979, Ser. No. 54,645
Int. Cl.[3] **A01B** *65/02*
U.S. Cl. 172—633 **5 Claims**



1. An articulated plow comprising

a front section having a diagonal main frame with plow bottoms connected thereto at predetermined intervals,

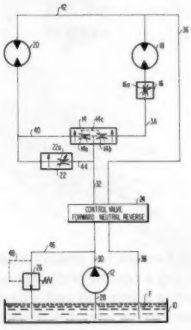
a rear section having its front end pivotally connected to the rear end of said front section on a transverse horizontal axis and having a diagonal main frame with plow bottoms connected thereto at predetermined intervals, said rear section resiliently flexing laterally and rearwardly about its connection with the front section when subject to the draft forces encountered in a plowing operation, said main frame of said rear section being disposed at a small predetermined horizontal angle to said front section main frame when not engaged in a plowing operation, said horizontal angle being large enough to substantially compensate for said resilient flexing of said rear section during a plowing operation wherein said horizontal angle is reduced thereby minimizing overcut of the plow.

4,271,914

AUTOMATIC FEED AND ROTATIONAL SPEED CONTROL SYSTEM OF A HYDRAULIC MOTOR OPERATED DRILL

Michael O. Dressel, Englewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 746,767, Dec. 2, 1976, abandoned. This application Dec. 8, 1978, Ser. No. 968,046
Int. Cl.[3] **E21B** *3/00;* **E21C** *5/00*
U.S. Cl. 173—158 **2 Claims**



1. In a hydraulic system for a hydraulically driven drill for drilling in rock material, said system comprising a source of hydraulic pressure fluid including a sump tank of hydraulic fluid and a hydraulic pump, a first hydraulic motor for rotating said drill, a second hydraulic motor for feeding said drill relative to said material being drilled, fluid flow lines means interconnecting said source and said motors, said system further comprising:

first means within said line means and between said source and said second motor for causing thrust exerted by the second motor on said drill to increase and rotational speed of the first motor to decrease as the drill encounters more difficult drillability material and vice versa, said first means including a needle valve in series with said second motor;

second means within said line means in series with said needle valve for delivering hydraulic fluid under fixed proportional flow to said motors to cause the rotational speed of the first motor to slow down in proportion to the slowing down in the speed of the second motor;

a relief valve in parallel with said pump by connections to said line means between said pump and said second means and to said tank, and

third means within said line means for connecting said source to said first motor and bypassing said second means for delivering hydraulic fluid at a fixed rate to said first motor when an increasing load is applied to said second motor as drilling meets with a higher degree of resistance to drilling to set a minimum rotational speed of said first motor;

whereby said increasing load applied to said second motor

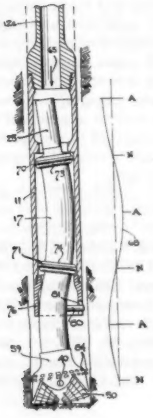
further results in an increased pressure drop across the combination of said second motor and said needle valve as increased load on said second motor exceeds pressure drop across said first motor, and in an increased pressure in said lines means ultimately opening said relief valve wherefore fluid diverted therethrough lessens flow to said second means to thereby lessen flow to said motors and needle valve with the consequence that drill rotation is reduced and decreased pressure at said needle valve increases pressure at said second motor with greater thrust made available therefrom, and a decreasing load applied to said second motor as drilling meets with a resistance decreasing from said higher degree thereof results in a decreased pressure in said line means which ultimately obtains closing said relief valve which effectuates increased flow in said line means with increasing flow to said second means and thereby enabling increased pressure at said needle valve with concomitantly decreasing pressure drop at said second motor resulting in reducing the thrust thereof to accommodate said decreased resistance to drilling.

4,271,915

ELASTICALLY VIBRATORY LONGITUDINAL JACKETED DRILL

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Aug. 6, 1979, Ser. No. 63,840
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—56 **18 Claims**



1. A sonic drill suitable for drilling through hard work material comprising:

an elastic drill stem,

a drill bit connected to one end of said drill stem, said bit being biased against said work material,

an orbiting mass oscillator having an eccentrically mounted rotor and connected to said stem at a point therealong spaced from said bit, the rotation axis of said rotor being substantially parallel to the longitudinal axis of the stem,

means for rotatably driving said oscillator rotor so as to generate a rotating force vector in said stem in a plane substantially normal to the longitudinal axis of the stem, said rotor being driven at a frequency such that an elastic standing wave vibration pattern is established in said stem,

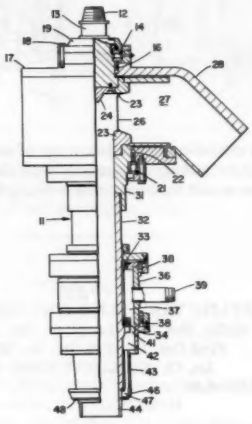
the stem being caused to cyclically stretch and compress longitudinally at the frequency of the vibration pattern so as to describe a closed orbital motion with orbital bending of the stem, the bit being nutated by the stem in rolling biased contact against the work material.

4,271,916

SYSTEM FOR ADAPTING TOP HEAD DRILLING RIGS FOR REVERSE CIRCULATION DRILLING

Paul Williams, 275 Courtney La., Reno, Nev. 89523

Filed May 4, 1979, Ser. No. 36,114
Int. Cl.³ E21B *11/12, 21/02*
U.S. Cl. 175—215 **9 Claims**



1. A system for adapting a top head drive drilling rig having a tapered threaded socket for securing threaded drill pipe to reverse circulation drilling, comprising a generally cylindrical, tubular adapter assembly having a bore extending axially therethrough, a tapered threaded member extending axially from one end of said assembly for engaging said socket of a top head drive; an annular housing disposed about a portion of said assembly, first bearing means for supporting said housing in relative rotation with said assembly, said housing including an annular chamber communicating with said bore, a discharge chute extending from said chamber to the exterior of said housing; an annular sleeve disposed about said assembly, second bearing means for supporting said sleeve in relative rotation with said assembly, pressurized fluid delivery means joined to said sleeve, threaded coupling means extending from the other end of said assembly and adapted to be joined to a section of drilling pipe having a complementary threaded coupling means at the upper end thereof, pressure tight coupling means extending between said upper end of said drilling pipe section and said other end of said assembly, and means on said assembly for connecting said pressurized fluid delivery means and said pressure tight coupling.

4,271,917

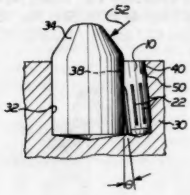
LOCKING DEVICE FOR HARD METAL INSERTS

Lloyd W. Sahley, Mayfield Heights, Ohio, assignor to Syndrill Products Joint Venture, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,246
Int. Cl.³ E21B *10/52*
U.S. Cl. 175—410 **7 Claims**

1. A steel pin for locking a hard metal insert into a socket in a hardened steel working head of a tool for comminuting a hard mineral formation and for disposition in a small bore drilled into said working head along side said socket and intersecting said socket at the entrance thereto, said pin comprising a steel pin of generally cylindrical configuration having a lead end and an anvil end, one of said ends being deformable under impact in a generally radial direction into locked engagement with said small bore, an axially extending relief formed along one side of said pin from a point intermediate said lead end and said anvil end and extending toward the lead end thereof whereby said lead end has a smaller cross-section than said

anvil end to facilitate entry of said pin into said bore and a plurality of circumferentially spaced axially extending hard-



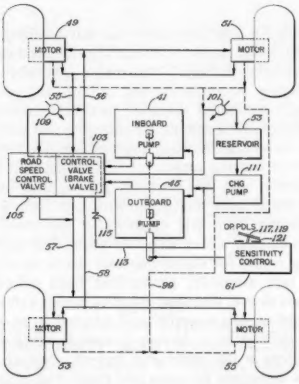
ened ribs extending from adjacent one of said ends toward the other end for locking engagement with the side wall of said small bore in said hardened steel working head.

4,271,918

HYDROSTATIC VARIABLE RATIO CONTROL SYSTEM

Lloyd A. Molby, Box 7788, Longview, Tex. 75602

Filed Oct. 11, 1978, Ser. No. 950,403
Int. Cl.[3] B60K *26/02*; G05G *7/04*
U.S. Cl. 180—6.48 **6 Claims**



1. In a hydrostatic system for at least one variable displacement pump having an actuating member movable in two directions for varying displacement in at least forward and reverse directions of travel of a vehicle; a hydraulically actuatable device operable by fluid from said pump; a hydraulic reservoir; serially interconnecting supply and return lines; the improvement comprising:

a. at least one operator control member movable in two directions for moving said actuating member in its respective directions responsive to an operator; said operator control member being connected with said actuating member; and

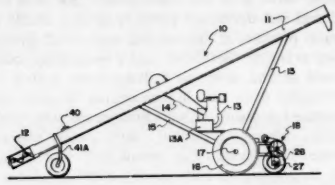
b. a sensitivity control means for setting a predetermined sensitivity of control of said operator control member; said sensitivity control means being operable from minimum to maximum in a given direction; said sensitivity control means being operatively connected intermediate said actuating member and said operator control member such that said sensitivity control means is adjustably positionable to one of a plurality of positions to control the amount said actuating member is moved by full movement of said operator control member.

4,271,919

AUGER ASSEMBLY MOVING DEVICE

Hugh R. Vaughan, Box 531, Yorkton, Saskatchewan, Canada

Filed Jun. 1, 1979, Ser. No. 44,719
Int. Cl.[3] B60K *25/00*
U.S. Cl. 180—16 **5 Claims**



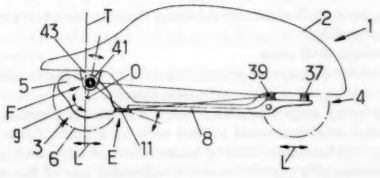
1. A drive attachment for auger assemblies which include a pair of ground engaging wheels mounted on a transverse axle and supporting an auger tube and auger flight assembly, a source of power for said auger flight assembly and a battery associated with said source of power; said drive attachment comprising in combination a drive wheel journalled for rotation adjacent said axle, means to rotate said drive wheel and means to raise and lower said drive wheel out of and into contact with the ground, said drive attachment including a supporting frame mounted upon said axle, said drive wheel being journalled for rotation within said frame, said means to raise and lower said drive wheel out of and into contact with the ground including said frame being mounted for selective vertical movement upon said axle, said means to raise and lower said drive wheel out of and into contact with the ground including a pair of guide channels secured to said axle and extending vertically therefrom, a vertical plate secured to said supporting frame and engaging with said guide channels for vertical movement therein, a gear and rack assembly on said axle operatively connected to said plate to move same vertically and a hand crank operatively engaging said gear and rack assembly to operate same.

4,271,920

AUTOMOBILE VEHICLE WITH TRANSVERSE ENGINE-DRIVE UNIT

Andre J. Barthelemy, Saint-Remy-les-Chevreuse, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed May 30, 1978, Ser. No. 910,673
Claims priority, application France, Jun. 3, 1977, 77 17101
Int. Cl.[3] B60K *5/04*
U.S. Cl. 180—55 **2 Claims**



1. Automobile vehicle comprising a self-supporting body to which are connected elastically the front and rear axles including a driving axle, as well as an engine-drive transmission unit arranged transversally, said engine-drive unit being fastened to the driving axle, a longitudinal sub-frame fastened to the non-driving axle, said sub-frame being rigid in its mean horizontal plane to maintain a constant geometry between the front and rear axles, said engine-drive unit being connected, on the one

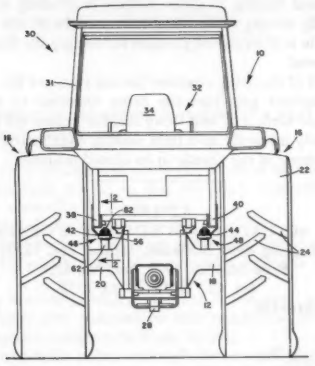
hand, with said sub-frame by means adapted to prevent any relative longitudinal movement between the unit and the sub-frame while permitting slight pivoting movements around a transverse axis and possibly vertical movements, between the unit and the sub-frame, and, on the other hand, with the body by resilient connecting devices, the means connecting the unit to the sub-frame comprise at least one flexible sleeve transverse articulation whose flexibility is practically nil in the longitudinal direction but possible in the vertical direction, two articulations being provided, namely, one on each side of the sub-frame.

4,271,921

ADJUSTABLE MOUNT FOR A TRACTOR CAB

Jon K. Ochsner, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 31, 1979, Ser. No. 62,590
Int. Cl.[3] B62D *23/00*
U.S. Cl. 180—89.12 **18 Claims**



1. In a tractor having a chassis which vibrates at certain frequencies depending on the operating conditions of the tractor and a cab resiliently mounted on the chassis and vibrationally isolated therefrom by resilient mount assemblies, the cab on its mount assemblies having at least one natural frequency of vibration so that vibrations in the chassis at the natural frequency cause the cab to resonate, the improvement comprising adjustable means separate from the resilient mount assemblies connected between the chassis and the cab for selectively varying the natural frequency of the cab on its mount assemblies to avoid cab resonance for a preselected operating condition of the tractor.

4,271,922

WHEEL SUSPENSION SYSTEM

Alan R. Kishline, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 4, 1978, Ser. No. 966,077
Int. Cl.[3] B60K *17/30*; B60G *3/08*
U.S. Cl. 180—254 **7 Claims**

1. An independent wheel suspension system for a vehicle comprising:

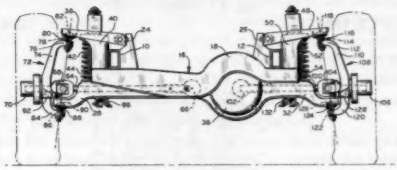
a frame;

an elongate cross member secured to said frame;

a pair of upper control arms pivotally secured to said cross member and extending in opposite directions outwardly therefrom; ;p1 a pair of axle arms pivotally secured to said cross member on the same side of the vehicle center line and substantially inwardly of the pivotal securement of the respective upper control arm and extending in opposite directions outwardly therefrom below said control arms;

a pair of vertically extending wheel carrying steering knuckles;

a first set of ball-joint connection means interconnecting the outer end of said control arms to the upper end of a respective one of said steering knuckles; and



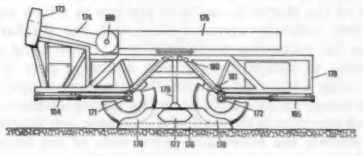
a second set of ball-joint connection means interconnecting the outer end of said axle arms to the lower end of a respective one of said steering knuckles.

4,271,923

MOBIL DEVICE FOR GENERATING ACOUSTIC SHEAR WAVES IN THE EARTH

Pierre-Claude Layotte, Les Mathes, and Andre James, Royan, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 5, 1979, Ser. No. 55,095
Claims priority, application France, Jul. 5, 1978, 78 20008
Int. Cl.[3] G01V *1/047, 1/053*
U.S. Cl. 181—114 **10 Claims**



1. In a mobile device for generating acoustic shear waves in the earth, comprising: a target-member having a coupling surface adapted for coupling the target-member with the earth and having tracks thereon adapted to receive wheels; a mass for striking the target-member and means for imparting to the mass a velocity of a determined amplitude having a component parallel to the coupling surface; and a vehicle adapted to support and transport the target-member, the mass and the velocity imparting means, and having at least one axle with wheels thereon,

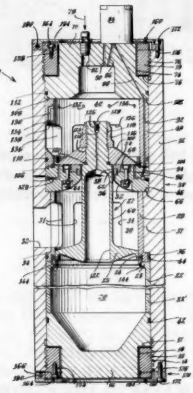
the improvement which comprises: positioning means for displacing the target-member between a raised transportation position and a lowered operational position wherein the coupling surface is in contact with the earth; and driving means for displacing said at least one axle between a first transportation position wherein its wheels are in contact with the earth and remote from the target-member and a second operational position wherein the wheels mount the lowered target-member and are received by the tracks thereon;

whereby said displacement of the axle can be effected while the vehicle is stationary, and said wheels bear down upon said target-member with at least a part of the weight of said vehicle when the target-member and the axle are both in their respective operational positions.

4,271,924
AIRGUN APPARATUS PROVIDING HIGH STRENGTH AND HIGH PRESSURE CAPABILITIES

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Oct. 27, 1978, Ser. No. 955,184
Int. Cl.[3] G01V *1/38*
U.S. Cl. 181—120 20 Claims



1. In an airgun impulsive energy source wherein gas pressure in an operating chamber is applied to the operating piston of a reciprocatable shuttle for holding the shuttle in an initial closed position for causing a firing piston of the shuttle to engage a firing seal to block access from a firing chamber to discharge port means for preventing pressurized gas in said firing chamber from escaping through said discharge port means and wherein the holding action of the gas pressure is released from the shuttle by actuating means for permitting the sudden movement of the shuttle to an open position in which said firing chamber suddenly communicates with the discharge port means for permitting pressurized gas in said firing chamber suddenly to escape through said discharge port means for generating a powerful impulse, the invention comprising:

an elongated cylindrical housing having at least one discharge port in the wall of the housing at a location intermediate the lower and upper ends of the housing and having an internal annular stop surface integral with the wall of said housing in predetermined axial position within the cylindrical housing above the discharge port and facing upwardly toward the upper end of the housing;

removable bottom closure means mountable in the lower end of said housing for closing the lower end of said housing for forming a firing chamber within the lower portion of said cylindrical housing;

removable partition means insertable down through the upper end of said cylindrical housing and having an external annular stop surface facing downwardly engageable with said internal annular stop surface for positioning said removable partition means above said discharge port in predetermined axially registered relationship with respect to the discharge port, said partition means having the shank of an axially reciprocatable shuttle extending axially therethrough with a firing piston below and an operating piston above said partition means;

an operating cylinder sleeve insertable down through the upper end of said cylindrical housing for resting on said removable partition means;

removable top closure means engageable with the upper end of said operating cylinder sleeve and mountable in the upper end of said housing for holding said sleeve firmly down against said removable partition means for holding said partition means firmly against said internal annular stop surface;

said removable top closure means and said operating cylinder sleeve defining an operating cylinder within which said operating piston can axially reciprocate;

said removable top closure means including passage means for feeding pressurized gas into said operating cylinder;

whereby said operating cylinder sleeve and said partition means can conveniently be removed from said housing by removing said top closure means; and

said elongated cylindrical housing being an integral unit extending from said top closure means to said bottom closure means for providing high strength capability in said airgun of utilizing pressurized gas of a high pressure in the range from 4,000 to 6,000 p.s.i.

18. In an airgun having a shuttle which is movable into a closed position for closing a firing chamber and which is suddenly movable into an open position for allowing pressurized gas to discharge suddenly from the firing chamber out through a discharge port, the invention comprising:

a firing seal of tough, durable, stiffly flexible material encircling said shuttle when in its closed position;

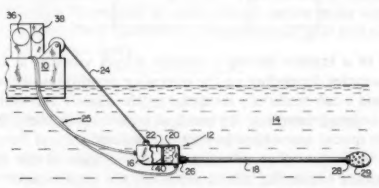
said firing seal being mounted in the wall of the firing chamber and having an inner surface protruding radially inwardly for engaging the periphery of the shuttle when the shuttle is in its closed position for sealing the firing chamber; and

the wall of the firing chamber having passages for admitting pressurized gas from the firing chamber to the radial outside surface of said firing seal for urging the firing seal radially inwardly into tight sealing engagement with the periphery of the shuttle in its closed position.

4,271,925
FLUID ACTUATED ACOUSTIC PULSE GENERATOR

Kenneth E. Burg, 4505 Bordeaux, Dallas, Tex. 75205

Filed May 29, 1979, Ser. No. 42,917
Int. Cl.[3] G01V *1/133, 1/38*
U.S. Cl. 181—120 24 Claims



1. A fluid actuated acoustic pulse generator for radiating acoustic energy into a surrounding body of water in response to the abrupt termination of fluid flow within said generator, said generator comprising:

a submersible elongated tubular pulse propogation member of uniform, solid wall construction having a generally uniform internal cross-sectional diameter and material construction therealong for receiving a high velocity, undisturbed fluid flow therethrough and being formed to contain a water hammer pressure pulse therein and permit the substantially unrestricted propagation thereof, longitudinally therealong, said tubular member being formed of a substantially non-compliant material having substantially the same acoustic impedance as water;

a high pressure fluid storage vessel containing fluid therein under pressure for subsequent flow through said tubular member;

means for sealably communicating said storage vessel with the fore end of said tubular member for flow transfer therebetween;

valve means secured within the aft end of said tubular member for abruptly terminating flow therein and generating a water hammer pressure pulse uniformly therealong and substantially within a predefined frequency band; and

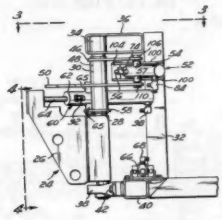
means for communicating with said valve for the remote actuation thereof to control fluid flow within said tubular member and to remotely close said valve to abruptly terminate said fluid flow and generate said pressure pulse.

4,271,926

ROTATABLE WORK PLATFORM

Richard E. Cullity, La Mirada, Calif., assignor to Mark Industries, Carson, Calif.

Filed Feb. 4, 1980, Ser. No. 118,429
Int. Cl.³ B66F *11/04*
U.S. Cl. 182—2 **9 Claims**



1. Apparatus for the reciprocal rotation of a work platform on a boom lift comprising:

a pivot pin;

means for attaching said pin to the boom at the end thereof remote from the lift so that the pin is disposed substantially vertically;

a work platform frame;

means for attaching said work platform frame to the pin so that the platform frame is pivotally rotatable about the pin;

an idler bracket pivotally mounted on the pin;

a first idler arm mounted on said bracket so as to extent outwardly horizontally from the pin;

a first hydraulic piston and cylinder assembly of the dual actuation type, said first hydraulic cylinder having a first reservoir and a second reservoir formed within the first cylinder by the first piston and a first piston rod connected to the first piston and extending out of the first cylinder at one end thereof;

means connecting the first hydraulic assembly between the first idler arm and the work platform frame so that the first piston rod is pivotally attached to one thereof and the first cylinder is pivotally attached to the other thereof, whereby the first piston moves relative to the first cylinder in response to the application of hydraulic fluid under pressure to the first reservoir to rotate the frame in a clockwise direction to a first relative position with respect to the idler arm bracket and the piston moves relative to the cylinder in response to the application of hydraulic fluid under pressure to the second reservoir to rotate the frame in a counterclockwise direction to a second relative position with respect to the idler arm bracket, said second frame relative position being displaced counterclockwise about90° from said first frame relative position;

a second idler arm mounted on said bracket so as to be vertically offset from the first idler arm and to extend outwardly horizontally from the pin, said second idler arm being laterally offset between 90° and 120° from the first idler arm;

a second hydraulic piston and cylinder assembly of the dual actuation type, said second hydraulic cylinder having a third reservoir and a fourth reservoir formed within the second cylinder by the second piston and a second piston rod connected to the second piston and extending out of the second cylinder at one end thereof;

means connecting the second hydraulic assembly between the second idler arm and the boom so that the second piston rod is pivotally attached to one thereof and the second cylinder is pivotally attached to the other thereof, whereby the second piston moves relative to the second cylinder in response to application of hydraulic fluid under pressure to the third reservoir to rotate the idler arm bracket in a clockwise direction to a first relative position with respect to the boom and the piston moves relative to the second cylinder in response to the application of hydraulic fluid under pressure to the fourth reservoir to rotate the idler arm bracket in a counterclockwise direction to a second relative position with respect to the boom, said second idler arm bracket relative position being displaced counterclockwise about 90° from said idler arm bracket first relative position; and

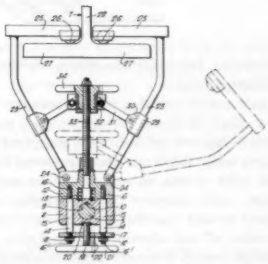
means for selectively applying hydraulic fluid under pressure to at least one of said reservoirs to initiate the rotary movement of the frame with respect to the boom in a first predetermined direction.

4,271,927

INSPECTION OR MAINTENANCE CRADLE

George S. Brown, Sawbridgeworth, and Robert E. Hatton, Great Bardfield, both of England, assignors to Riggers (Steeplejacks) Limited, Essex, England

Filed Jun. 4, 1979, Ser. No. 44,780
Int. Cl.³ E04G *3/16*
U.S. Cl. 182—36 **10 Claims**



1. A suspended cradle for use in the inspection and maintenance of difficulty accessible structures, said cradle including:

a frame;

a series of at least three roller assemblies mounted on said frame in horizontally spaced apart relation for suspending said frame from said structure;

each said roller assembly having rollers for running on a track provided on the structure to be inspected or maintained and thereby suspending said frame for movement along the track; and

means for rendering each said roller assembly inoperative by relieving the load on the rollers of said assembly and withdrawing the rollers from the track so that the inoperative roller assembly can move past an obstruction on the track whilst the frame remains movably supported on the track by the remaining roller assemblies.

4,271,928

LUBRICANT SUPPLY DEVICE

James Northern, Hemel Hempstead, England, assignor to Rolls-Royce Limited, London, England

Filed May 11, 1979, Ser. No. 38,228
Claims priority, application United Kingdom, Jul. 11, 1978, 29440/78
Int. Cl.³ F01M *11/12*; F16D *3/46*
U.S. Cl. 184—6.4 **4 Claims**

1. A lubricant supply device for receiving a lubricant under pressure from a lubricant supply means and delivering lubri-

cant to an apparatus to be lubricated, said lubricant supply device comprising:

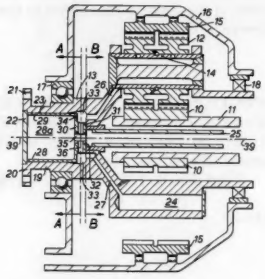
inlet means for receiving lubricant under pressure from the lubricant supply means;

a chamber rotatable about an axis of rotation, said chamber being operatively connected to and having communication with said inlet means for receiving lubricant under pressure therefrom;

manifold means operatively rotatable with said chamber and disposed radially outwardly of said inlet means;

passage means extending between said inlet means and said manifold means for delivering lubricant under pressure from said inlet means to said manifold means;

an outlet means extending from said manifold means for



delivering lubricant therefrom to the apparatus to be lubricated; and

chamber outlet metering means between said chamber and said manifold means for delivering a minor proportion of a total amount of lubricant supplied to said manifold means when lubricant under pressure is being supplied by said inlet means to said chamber and to said passage means, said chamber outlet metering means being positioned in said chamber radially outwardly of said axis of rotation of said chamber and radially outwardly of said passage means whereby upon cessation of the supply of lubricant under pressure to said inlet means, any lubricant in said chamber is centrifugally pumped through said chamber outlet metering means to said manifold means and through said outlet means.

4,271,929

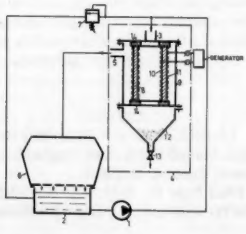
MACHINE LUBRICATION SYSTEM

Semyon I. Fishgal, 610-60 Mountainview Ave., Toronto, Ont. M6P 2L4, Canada

Filed Feb. 16, 1979, Ser. No. 12,592

Int. Cl.³ F01M *1/10*

U.S. Cl. 184—6.24 **1 Claim**



1. A machine lubrication system including an oil-lubricant pressure source communicated with a reservoir means and a porous piezoelectric ceramic ultrasonic transducer located in the flow path of the lubricant in a housing and partioning the latter into an input part and an output part.

4,271,930

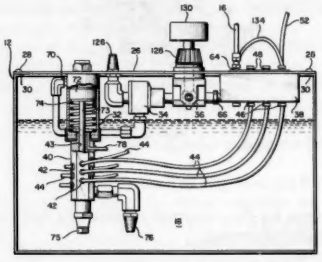
ENCLOSED LUBRICATING APPARATUS

Ronald E. Thomson, Lake Mills, and David W. Hammermeister, Sun Prairie, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 902,908, May 5, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,154

Int. Cl.³ F16N *7/38*

U.S. Cl. 184—15 A **15 Claims**



11. Lubricating apparatus for lubricating movable mechanical systems comprising:

an enclosure including a reservoir of lubricating fluid;

a pneumatically actuable pump having an inlet for receiving lubricating fluid and at least one outlet for dispensing lubricating fluid;

means mounting said pump within said enclosure including means communicating said pump inlet to said lubricating fluid in said reservoir and including lubricating fluid conduit means coupled intermediate said pump outlet and said movable mechanical system being lubricated; and

pneumatic valve trip means including an actuator adapted for mounting adjacent said movable mechanical system for actuation by a component of said system, further including an air valve pneumatically coupled intermediate said pump and a source of air pressure for supplying said air pressure to said pump in response to said actuator, thereby delivering clean shots of lubricating fluid each time said pneumatic valve trip means is actuated.

4,271,931

ELEVATOR CONTROL DEVICE

Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1979, Ser. No. 48,110

Claims priority, application Japan, Jun. 14, 1978, 53/71835

Int. Cl.³ B66B *5/00*

U.S. Cl. 187—29 R **10 Claims**

1. A control device for an elevator, comprising:

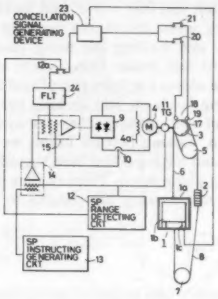
(a) rope means connected to a cage;

(b) rotary elements driven by an electric motor;

(c) position detecting means for detecting the position of at least one of said rotary elements causing vibration torque, to provide an output signal, said position detecting means comprising an upward movement position detector and a downward movement position detector, whereby said output signal is provided having different phases for upward and downward movement of said elevator;

(d) a cancellation signal generating circuit for providing a

cancellation signal in response to said output signal of said position-detecting means; and

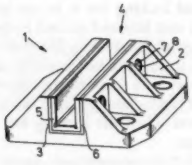


(e) a control circuit for receiving said cancellation signal to apply current necessary to cancel said vibration torque to said electric motor.

4,271,932
ELEVATOR GUIDE SHOE

Wolfgang Klein, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Acla-Werke Aktiengeseilschaft, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,900
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 7728040[U]
Int. Cl.³ B66B 7/02
U.S. Cl. 187—95 **12 Claims**



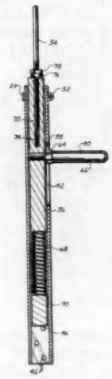
1. A guide shoe for attachment to the car of an elevator and for sliding on a guide rail in a hoistway, comprising: a holding shoe made of rigid material and having a U-shaped longitudinal recess therein, a liner of U-shaped cross-section, said liner being made of plastic material, the liner and holding shoe being secured together by pins integrally formed with said liner extending outward from said liner to engage in corresponding holes in the holding shoe, an intermediate layer of cellular elastomer between the holding shoe and the liner and said pins extending through said intermediate layer and engaging said holes whereby said pins are also effective to prevent substantial translation of said intermediate layer with respect to said liner.

4,271,933
WHEELCHAIR BRAKE ATTACHMENT

James C. Pearce, and Richard L. Williams, both of #17 Briercroft Office Park, Lubbock, Tex. 79412

Filed Jul. 18, 1977, Ser. No. 816,396
Int. Cl.³ B60T 1/04
U.S. Cl. 188—2 F **10 Claims**

1. On a wheelchair having
a. a frame having frame members and an axle,
b. at least one large wheel on the axle connected to the rear of the wheelchair,
c. at least one swiveled small wheel connected to the front of the wheelchair, and
d. handgrips connected to the rear of the wheelchair vertically above the rear wheel,
e. said wheelchair being partially open at the front; the improved method of quickly attaching a braking system to the wheelchair comprising the following steps:
f. clamping a handle pivoted to a pitman to the handgrip,

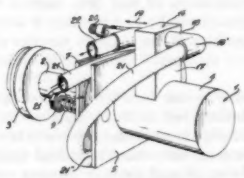


g. clamping a top of a sleeve telescoped over the pitman to a frame member by a J-bolt, and
h. anchoring the sleeve by placing a hole in a plate at the bottom of the sleeve over the axle of the wheelchair, thereby
j. attaching a braking system to a wheelchair without permanently altering the wheelchair.

4,271,934
BRAKE

Pierre Gagnon, 5637 Wilderton Ave., Montreal, Canada (H3T 1S1), and Pierre Laforest, 1945 De Bruxelles St., Montreal, Canada H1L 5Z5

Filed Sep. 10, 1979, Ser. No. 74,110
Int. Cl.³ F16D 65/24
U.S. Cl. 188—170 **11 Claims**

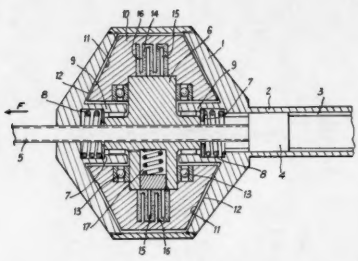


1. A brake for braking a load connected to the output shaft of a fluid-operated motor having a flexible conduit connected thereto for feeding pressurized motive fluid to said motor, said brake comprising a brake member mounted on said output shaft for rotation therewith, a brake shoe movable between a first position in braking engagement with said brake member, and a second position releasing said brake member, spring means biasing said brake shoe to said first position, said flexible conduit having a portion sandwiched between a reaction surface and said brake shoe and causing movement of said brake shoe from said first to said second position when pressurized fluid is present in said conduit portion and allowing movement of said brake shoe from said second to said first position under the bias of said spring means when no pressurized fluid is present in said conduit protion.

4,271,935
INERTIAL DEVICE TO PREVENT AND PERMIT MOTION BETWEEN TWO MEMBERS

Roger P. Pelat, Paris, and Gildas Le Pierres, La Ferte Alais, both of France, assignors to International Vibration Engineering, Boutigny sur Essonne, France

Filed Apr. 3, 1978, Ser. No. 892,849
Claims priority, application France, Apr. 7, 1977, 77 10608
Int. Cl.³ B60T *8/12*
U.S. Cl. 188—185 **7 Claims**



1. A device for permitting and restraining relative motion between two members comprising:

a casing connected to one of said members, said casing comprising two abutment surfaces,

a first element joined to the other member for sliding movement axially through said casing without rotation,

a rotative element driven in rotation by movement of said first element and opposing movement of the first element when its rotation is restrained, said rotative element being joined to said first element so as to be placed in rotation by a movement of small acceleration of the first element and to be displaced axially when the acceleration of said first element is greater,

an auxiliary member having abutment surfaces;

means mounting said auxiliary members for rotation on said rotative element and for movement axially in response to axial movement of said rotative element;

elastic means to normally maintain said rotative element in a position in which the abutment surfaces on said auxiliary member are spaced from the abutment surfaces of said casing; said elastic means deflecting in response to said greater acceleration of said first element to move said rotative element axially to a position in which one of the abutment surfaces of the auxiliary member engages one of the abutment surfaces of the casing to brake the auxiliary element;

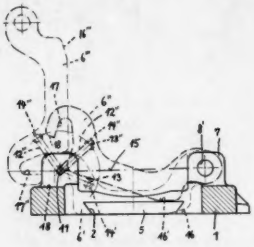
viscous material means between opposed surfaces of said rotative element and auxiliary member for driving said auxiliary member in rotation in response to rotation of the rotative element, said viscous material means permitting slow revolving of said rotative element relative to said auxiliary member with corresponding slow movement of said first element during braking of said auxiliary element.

4,271,936
CLOSURE FOR RETAINING AN INSERTABLE BRAKE LINING IN A BRAKE LINING HOLDER FOR DISK BRAKES

Wirth Xaver, Ismaning, and Schörwerth Mathias, Geretsried, both of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,285
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841139
Int. Cl.³ F16D *65/04*
U.S. Cl. 188—244 **7 Claims**

1. In a lock for retaining a brake lining insertable into a brake lining support of a disk brake, brake lining support means including longitudinally extending brake lining guide means having an open end, a locking bar having first and second ends, mounting bracket means on said brake lining support means and a pin through said first end of said locking bar parallel to said brake lining guide means and received in said mounting bracket means, said locking bar being pivotable in a plane perpendicular to said brake lining guide means and into a locking position across the open end of said brake lining guide means, a locking latch on said locking bar and positionable against a face of said opening when the locking bar is in the locking position, locking bracket means on said brake lining support means and having a first bore therethrough parallel to said brake lining guide means, there being a second bore at the second end of said locking bar parallel to said brake lining



guide means and between said first bore and said first end of the locking bar, a U-shaped spring clip having a pair of substantially parallel legs with one of said legs being receivable in said first bore and the other of said legs being receivable in said second bore, said second bore at the second end of said locking bar being positioned on a locking direction side of a line extending perpendicularly between the axes of said first bore and said pin when said locking bar is in the locking position, the distance between said first and second bores when the locking bar is in the locked position being less than said distance when the locking bar is in its unlocked position such that said spring clip is stressed to exert a force in the locking direction of the locking bar when the locking bar is in the locking position and is relieved of stress when the locking bar is pivoted into the unlocking position.

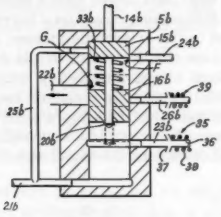
4,271,937
VALVES FOR HYDRAULIC BRAKES

Donald Hatch, Whaley Bridge; Christopher R. Ellis, Chinley; Richard H. Gibbon, Chapel-en-le-Frith, and Walter R. Stirling, Buxton, all of England, assignors to Ferodo Limited, Great Britain

Continuation-in-part of Ser. No. 610,426, Sep. 4, 1975, abandoned. This application Nov. 29, 1977, Ser. No. 855,807
Claims priority, application United Kingdom, Sep. 25, 1974, 41809/74
Int. Cl.³ F16D *65/853*
U.S. Cl. 188—264 F **10 Claims**

1. In a hydraulically-operated friction brake of the kind comprising a casing for supporting (i) a rotatable member connectable to a vehicle propeller shaft and (ii) a retarding device which includes a pack of (a) annular friction plates drivably mounted on the rotatable member and (b) annular stator plates supported by said casing and inter-leaved with said friction plates, said pack of plates being relatively slidable axially of said rotatable member under the action of (c) hydraulically operable actuator means so as to bring said plates into contact to generate a retarding torque on said rotatable member, and including (d) means for circulating hydraulic liquid through a hydraulic circuit which includes said plates; the improvement comprising the provision of valve means operable to control the flow of hydraulic liquid to said plates so that (1) during periods of actuation of said retarding device at least

a major portion of said flow is directed to said plates and (2) during periods of non-actuation of said retarding device not more than a minor portion of the flow is directed to said plates, and the volume of said hydraulic liquid contained in said brake at the maximum operating temperature thereof is less than the



total volume of said casing including said hydraulic circuit and said actuator means, with there always being a liquid-free space within said casing so that said pack of plates will tend to empty itself of liquid into said liquid-free space during periods of non-operation of said brake.

4,271,938

HYDRAULIC SHOCK ABSORBING ARRANGEMENT FOR PIPE CONDUIT SYSTEMS

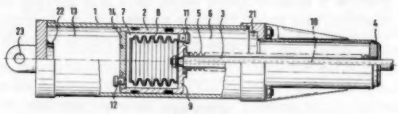
Peter W. Berger, Pforzheim, Fed. Rep. of Germany, assignor to Metallschlauch-Fabrik Pforzheim Witzenmann GmbH, Pforzheim, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 900,617

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721890

Int. Cl.³ F16F 9/24

U.S. Cl. 188—280 **3 Claims**



1. An hydraulic shock absorbing support for a pipe conduit system comprising: a cylinder filled with a liquid and provided at one end with a piston rod guide; a hollow piston presenting axially spaced end walls and slidably mounted in said cylinder so as to divide the interior of said cylinder into two cylinder chambers separated by said piston; a piston rod having one end connected to one end of said piston and slidable in said guide at said one end of said cylinder, the other end of said rod being arranged to be connected to a pipe of the conduit system a circularly corrugated metal sealing bellows disposed with its interior surface surrounding the outer surface of said piston rod with minimal clearance and secured in a liquid-tight manner between said one end of said piston and the surface of said guide which is located interiorly of said chamber; means for mounting said cylinder to a stationary bearing; means defining an overflow path at the interior of said piston between said cylinder chambers; normally open throttling valve assemblies communicating between each said cylinder chamber and said overflow path and each mounted in a respective piston end wall, each said assembly including a closing member mounted to undergo a closing movement in the direction opposite to a respective direction of movement of said piston during a shock absorbing stroke, under the combined action of the pressure medium in the said chamber adjacent the respective piston end wall and the mass inertia of said closing member; and an expandable compensation bellows which is disposed within said overflow path, is secured to the inner surface of said end wall at the end of said piston to which said piston rod is connected, and whose interior communicates only with the external atmosphere through an air outlet opening formed as an axial bore in said piston rod.

4,271,939

HYDRAULIC CONTROL SYSTEM FOR A HYDROKINETIC TORQUE CONVERTER

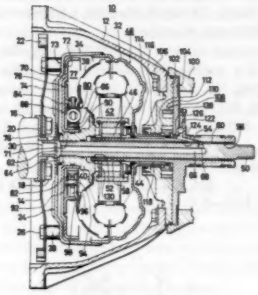
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

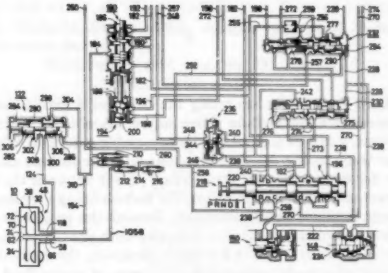
Filed Jan. 23, 1979, Ser. No. 5,891

Claims priority, application Japan, Sep. 5, 1978, 53-108040

Int. Cl.³ F16D 37/00

U.S. Cl. 192—3.3 **9 Claims**





1. A torque converter comprising

a converter cover;

a pump impeller secured to said converter cover and forming therewith a torque converter chamber;

a turbine runner within said torque converter chamber;

a clutch piston within said chamber cooperating with said converter cover to form a lock-up chamber;

a source of pressurized fluid;

a first passageway communicating with said source of pressurized fluid and with said torque converter chamber for feeding the pressurized fluid to the latter;

a second passageway communicating with said torque converter chamber for discharging the pressurized fluid from the latter;

a third passageway communicating with said lock-up chamber;

a lock-up control valve communicating with said source of pressurized fluid and with said third passageway to pressurize said third passageway with the pressure of the pressurized fluid;

said clutch piston having a lock-up position and a release position, and adapted to assume said lock-up position when the pressure in said lock-up chamber is relieved and

the pressure in said torque converter housing biases said clutch piston toward said lock up position; and

means disposed in said first passageway for ensuring the pressure prevailing in said torque converter housing is lower than the pressure which prevails in said lock-up chamber when said lock-up chamber is pressurized to bias said clutch piston toward said release position, so that said clutch piston unfailingly separates from said converter cover and moves to said release position upon pressurization of said lock-up chamber, said lower pressure ensuring means comprising a flow restrictor.

4,271,940

TWO-WAY POWER TRANSFERRING REDUCTION GEAR OF THE EPICYCLIC TYPE

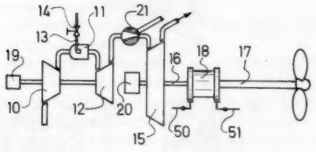
Lars T. Collin, Mölndal, Sweden, assignor to Lars Collin Consult AB, Mölndal, Sweden

Continuation of Ser. No. 829,536, Aug. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 667,341, Mar. 16, 1976, Pat. No. 4,051,679, which is a continuation of Ser. No. 595,228, Jul. 11, 1975, abandoned, which is a continuation of Ser. No. 422,845, Dec. 7, 1973, abandoned. This application May 16, 1979, Ser. No. 39,665

Claims priority, application Sweden, Dec. 8, 1972, 7216003

Int. Cl.³ B63H *23/08*; F16D *67/00*

U.S. Cl. 192—4 C **1 Claim**



1. A method for reversing the drive of a propulsion unit formed of a gas turbine prime mover capable of rotating in reverse, a driven member and a reversable epicyclic reduction gear train having drive connections with the turbine and with the driven member for transferring power between the prime mover and the driven member, the turbine being supplied with motor fluid and being connected through the gear train to the driven member in a manner whereby both the turbine and the driven member rotate in a forward direction, the method comprising effectively terminating the supply of motor fluid to the turbine, disconnecting the drive connection between the turbine and the reduction gear train, allowing the drive member and reduction gear train to rotate freely while braking the turbine and as small a part of the reversable gear as possible to at least approach a standstill condition, reversing the gear train and connecting the turbine thereto to cause the driven member, through the gear train, to rotate the turbine and said small part of the reversable gear in a reverse direction, then restoring the supply of motor fluid to the turbine thereby causing the turbine to brake fully and then to rotate in the forward direction through the gear train, causing the driven member to rotate in the reverse direction.

4,271,941

RETARDER CONTROLLED OVERRUNNING CLUTCH WITH AN AXIALLY INCLINED SLOT AND PIN

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 1, 1979, Ser. No. 16,585

Int. Cl.³ F16D *41/00*

U.S. Cl. 192—35 **8 Claims**

1. An overrunning clutch comprising:

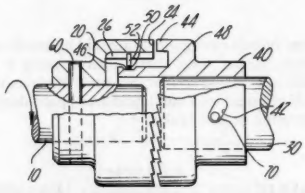
a driving shaft;

a cylindrical driving clutch member mounted coaxially with said driving shaft, said driving clutch member further being axially fixed with respect to said driving shaft, said driving clutch member further comprising first torque transmitting means formed on one end;

a driven shaft rotatably mounted in axial alignment with said driving clutch member;

a cylindrical driven clutch member slidably journalled on said driven shaft, said driven clutch member having second torque transmitting means on a lateral face thereof;

axially inclined torque transmitting means, adapted to connect said driven clutch member to said driven shaft, said axially inclined torque transmitting means moving said second torque transmitting means on said driven clutch member into and out of engagement with said first torque transmitting means on said driving clutch member for rotating said driven and driving clutch members; and



spring retarder means, mounted on said driven clutch member and adapted to engage said driving clutch member, said spring retarder means axially and rotatably moving said driven clutch member into engagement with said driving clutch member when said driving clutch member rotates at a relative speed faster than said driven clutch member, said spring retarder means further moving said driven clutch member out of engagement with said driving clutch member when said driven clutch member rotates at a relative speed faster than said driving clutch member, said spring retarder means further comprising a spring member engaging said driven clutch member and said driving clutch member.

4,271,942

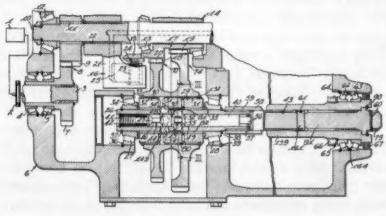
TWO-SPEED POWER TAKE-OFF

Gerardus M. Ballendux, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 2, 1978, Ser. No. 947,872

Int. Cl.³ F16D *21/04*

U.S. Cl. 192—48.91 **12 Claims**



1. A two-speed power take-off assembly comprising, a first and a second drive gear rotating on a common axis and driven at a high and low speed respectively, clutch teeth defined by each of said gears, a clutch collar slidably mounted for reciprocating on said common axis defining cammed surfaces, mating clutch teeth defined by said clutch collar for selectively engaging the clutch teeth on said gears, a cammed shaft rotatably and slidably mounted on said common axis and defining first and second cammed surfaces, first and second sets of clutch shifting elements mounted between and engaging said cammed

surfaces on said cammed shaft and said cammed surfaces on said clutch collar, resilient means biasing said cammed shaft in one direction, an output shaft selectively biasing said cammed shaft against the force of said resilient means to selected positions for selectively and alternatively clutching of said first and second gears, said cammed surface on said cammed shaft selectively biasing said first and second sets of clutch shifting elements radially to reciprocate and clutch said clutch collar in selective engagement with each of said gears.

4,271,943

BLOCKING SYNCHRONIZATION DEVICE FOR GEAR-TYPE CHANGE-SPEED TRANSMISSIONS

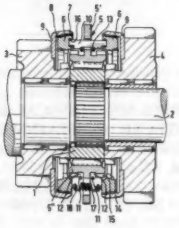
Gyözö Kuzma, Dachau, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,457

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754382

Int. Cl.³ F16D *23/08*

U.S. Cl. 192—53 F **2 Claims**



1. A blocking synchronization device for gear-type change-speed transmissions, comprising sleeve carrier means, shifting sleeve means non-rotatably but displaceably arranged on the sleeve carrier means for the connection with a gear to be engaged, two friction ring means having outer conical friction surfaces and arranged on both sides of the shifting sleeve means, spacer bolt means extending through the shifting sleeve means for holding the friction ring means at a mutual spacing and for centering the same, elastically yielding means for holding said friction ring means in a central starting position relative to the shifting sleeve means, and blocking means including inwardly directed blocking elements at the friction ring means as also blocking elements on the outside of the shifting sleeve means, characterized in that the blocking elements of the friction ring means and of the shifting sleeve means are toothed means, in that spacer bolt means engage in axial recesses of the friction ring means and in that the friction ring means are stressed axially against the spacer bolt means by drawsprings.

4,271,944

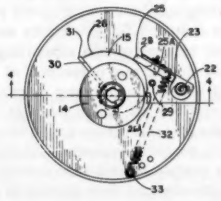
SINGLE REVOLUTION TORQUE LIMITING CLUTCH

Douglas R. Hanson, 1720 - 9th Ave. South, Anoka, Minn. 55303

Filed Feb. 12, 1979, Ser. No. 11,393

Int. Cl.³ F16D *7/00, 27/01*

U.S. Cl. 192—56 L **13 Claims**



1. An indexing overload torque release clutch comprising a rotatable driving member, a rotatable driven member co-axially mounted with said driving member, one of said members comprising a hub rotatably mounted with respect to the other of said members, said hub having an outwardly facing surface generated around said axis comprising a cam surface extending from a first position spaced radially outwardly from said axis a first distance at a first location substantially greater than the radial spacing of said cam surface from said axis at a second location annularly spaced from said first location, a drive surface on said hub generally parallel to the axis and joining the cam surface at said first location and extending inwardly toward said axis, said other member comprising a support extending outwardly from said axis farther than the radial spacing of the cam surface, a pivot member mounted on said support and having a portion extending to engage said drive surface on said hub with the pivot member in a first drive position, magnet means acting to create a magnetic force between said pivot member and said drive surface, and resilient means tending to urge said pivot member to its first drive position, said driven member causing said drive surface and said pivot member to engage and transmit torque to said drive member through the action of said resilient means and said magnet means, and upon exceeding a predetermined amount of torque said magnet means releasing and said pivot member pivoting against the action of said resilient means to a second release position about its pivot to permit the hub to rotate past said pivot member, said resilient means being operable for reset to urge said pivot member against said cam surface to thereby tend to urge said hub to continue to rotate under cam action until the pivot member and drive surface engage.

4,271,945

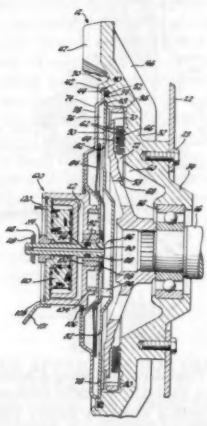
ELECTRICALLY ACTUATED VISCOUS FAN CLUTCH

John A. Budinski, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 5, 1978, Ser. No. 912,426

Int. Cl.³ F16D *35/00*

U.S. Cl. 192—58 B **2 Claims**



1. In a viscous fluid clutch including a rotatable drive shaft, driven means including a rotatable outer casing and a divider plate mounted in said casing for rotation therewith, said divider plate separating the space within said casing into a fluid reservoir chamber and an operating chamber, a clutch plate mounted on said shaft within said operating chamber for rotation with said drive shaft, opposed shear surfaces on said clutch plate and said casing disposed in close face-to-face and spaced relationship, inlet and outlet ports formed in said divider plate, pump means carried by said divider plate and in said operating

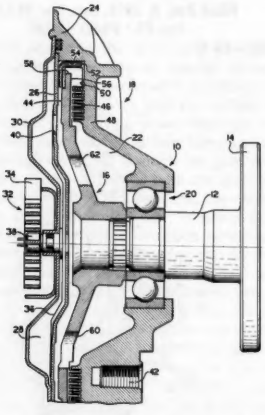
chamber for displacing a fluid medium from said operating chamber through said outlet port to said reservoir chamber, and a valve member operatively connected to said divider plate for rotation therewith for opening and closing said inlet port and thereby effecting selective communication of said fluid medium from said reservoir chamber to said operating chamber for filling the spaces between said shear surfaces to create a fluid drive coupling between said casing and said clutch plate, the improvement comprising electromagnetic means mounted exteriorly of said casing for controlling the opening and closing of said inlet port by said valve member, said electromagnetic means including bearing means mounted on said casing, a stationary electromagnetic coil housing mounted on said bearing means, an electrically energizable electromagnetic coil mounted in said coil housing, a shaft slidably and rotatably mounted relative to said coil along the axis of said coil and coil housing and extending through an opening formed in said casing into said reservoir chamber, an armature secured to said shaft movably mounted within said coil housing adjacent said coil for longitudinally sliding said shaft when said coil is energized, said valve member being directly and non-rotatably secured to the end of said shaft for axial movement therewith away from said inlet port upon energization of said coil, and spring means operatively connected to said valve member for urging said valve member toward said divider plate to close said inlet port upon deenergization of said coil.

4,271,946

PUMPING ELEMENT FOR TEMPERATURE RESPONSIVE VISCOUS FAN DRIVE

Erland T. Bridge, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1979, Ser. No. 4,095
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **9 Claims**



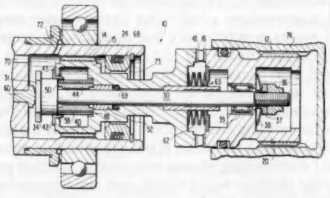
1. In a viscous fluid drive including a housing member having axially spaced generally radially extending side surfaces which, together with a generally axially extending inner peripheral surface on said housing member, define a working chamber, a reservoir defined by said housing member adjacent said working chamber, a clutch member located within said working chamber and having a pair of axially spaced generally radially extending side surfaces axially spaced from said radially extending side surfaces of said housing member and an outer generally axially extending peripheral surface spaced from said inner peripheral surface of said housing member, viscous fluid within said working chamber and said reservoir, an input shaft rotatably secured to one of said members and rotatably supporting said other member, an outlet opening having a front edge closest to the direction of fluid movement during operation of said drive and located in said housing member in the radial area of said peripheral surfaces for communicating fluid from said working chamber to said reservoir, an inlet opening in said housing member for communicating fluid from said reservoir to said working chamber, and condition responsive valve means to direct fluid between said reservoir and said working chamber through one of said openings, the improvement comprising a pump secured to said housing member and having a radially extending portion which is adjacent said outlet opening, projects axially toward said adjacent clutch side surface, and has a front edge which is substantially aligned with the rear edge of said outlet opening; and an axially extending portion circumferentially aligned with said radially extending portion, projecting radially a distance between said peripheral surfaces, and extending axially a distance between said side surfaces of said housing member to impinge fluid flowing between said peripheral surfaces and thereby direct said impinged fluid radially inwardly along said adjacent side surfaces of said members into contact at one side with said front edge of said radially extending portion and into said outlet opening.

4,271,947

THERMAL FUZE MECHANICAL DISCONNECT EUTECTIC CONTAINMENT

Fred J. Gaeckle, Erie, Pa., assignor to General Electric Company, Wilmington, Mass.

Filed Nov. 13, 1978, Ser. No. 960,023
Int. Cl.³ F16D *11/00*
U.S. Cl. 192—82 T **6 Claims**



1. In a torque disconnect means having a first means for connecting to a torque supply, second means for connecting to torque receiving means, third means for providing oil lubrication between said second means and said torque receiving means, fourth means for connecting and disconnecting said first and second means in torque transmitting relationship, said fourth means including bias means, tending to force said first and second means to disconnect positions and a thermal fuze loaded in compression by said bias means, said thermal fuze including a body having opposite, parallel abutment faces to which said bias means apply the compressive load, said thermal fuze body being constructed of fuze material which remains solid up to a predetermined temperature and a plurality of columnar supporting members which extend perpendicular to and between said abutment faces, whereby said fuze material prevents columnar bending of said supporting members until the predetermined temperature is reached, at which time the compressive load fails said supporting members in columnar bending so that said thermal fuze no longer resists said bias means, thereby allowing said bias means to disconnect said first and second means, the improvement comprising:

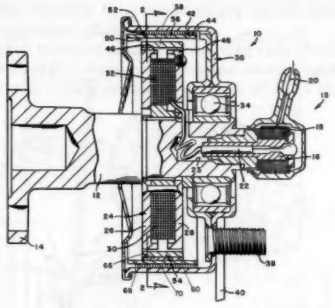
fifth means for containing said fuze material within a confined area, whereby said fuze material is prevented from contaminating said oil lubrication between said second means and said torque receiving means.

4,271,948

CLUTCH HAVING SEGMENTED BAND

Kwang Yew, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Mar. 16, 1979, Ser. No. 21,041
Int. Cl.[3] F16D *11/00*
U.S. Cl. 192—84 T 10 Claims



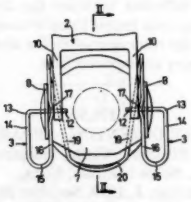
1. In a clutch, a pair of coaxial, relatively rotatable members comprising a driving member and a driven member, a band wrapped around one of said members, and electromagnetic means carried by said one member for urging said band into driving engagement with said one member, said relatively rotatable members having radially offset portions extending therefrom defining a gap therebetween, said band being located in said gap and having relatively movable inner and outer band members, one of said band members engaging the corresponding radially offset portion extending from said one relatively rotatable member when the clutch is engaged, the other band member carrying a friction surface frictionally engaging the other relatively rotatable member to establish a driving connection therewith when the clutch is engaged, said one band member comprising at least a pair of circumferentially spaced arcuate segments and a joining segment interconnecting the arcuate segments.

4,271,949

CLUTCH THRUST BEARING DEVICE

Jean P. Guerton, Maisons Alfort, and Francis Regazzoni, Paris, both of France, assignors to S.K.F. Compagnie d'Applications Mechaniades, Clamart, France

Filed Nov. 27, 1978, Ser. No. 964,007
Claims priority, application France, Dec. 2, 1977, 77 36374; Jun. 30, 1978, 78 19736
Int. Cl.[3] F16D *19/00*
U.S. Cl. 192—98 12 Claims



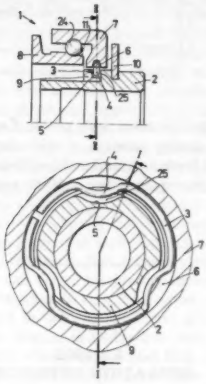
1. A clutch thrust bearing device comprising a rolling bearing provided with inner and outer races, said inner race having a radial flange, a clutch release fork having two branches connected to said rolling bearing for moving said rolling bearing axially, said fork and said bearing being capable of lateral movement relative to each other, and a unitary spring engaged with said inner race, said spring having two fork-contacting portions bearing laterally against said branches to move said fork elastically to a position which is centered relative to said rolling bearing.

4,271,950

CLUTCH MOUNTING AND ACTUATING DEVICE

Dieter Kolb, Kissingen, and Karl Müller, Poppenhausen, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,496
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1978, 2805045
Int. Cl.[3] F16D *23/14*
U.S. Cl. 192—98 21 Claims



1. In a clutch mechanism, particularly for motor vehicles, including a roller bearing assembly composed of a rotating member, a nonrotative member and roller bodies operatively interposed therebetween, clutch releasing means operatively associated with said rotating member, a guide element having said roller bearing assembly mounted in operative association therewith and clutch control means adapted to effect clutch actuating movement of said guide element, the improvement comprising connecting means interposed between said guide element and said nonrotative member for transmitting clutch actuating forces therebetween, said connecting means being configured to maintain said guide element and said nonrotative member rotatively fixed relative to each other while simultaneously allowing radial relative movement therebetween, said connecting means comprising a resilient annular member having first and second portions radially and circumferentially displaced relative to each other, said first portions being in fixed rotative engagement with said guide element, said second portions being in fixed rotative engagement with said stationary member.

4,271,951

CHECK VALVE APPARATUS FOR OIL PRESSURE OPERATED CLUTCH

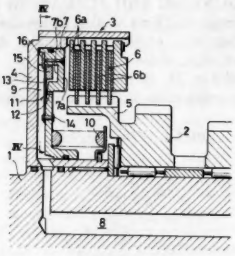
Sadanori Nishimura, Omiya; Yoji Yamada, Kawagoe; Takeyuki Shimizu, Kamifukuoka, and Masaru Yamashita, Higashimatsuyama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1979, Ser. No. 7,915
Claims priority, application Japan, Feb. 1, 1978, 53-9351; Feb. 14, 1978, 53-14991; Feb. 28, 1978, 53-21503
Int. Cl.[3] F16D *23/10*
U.S. Cl. 192—106 F 12 Claims

1. A relief valve apparatus for an oil pressure operated clutch having an oil pressure operation chamber, said clutch effecting engagement and disengagement between a driving shaft and a driven shaft, said apparatus comprising:

a wall of said chamber having a leak opening;

a leaf spring overlying the leak opening for opening and closing the leak opening; and



a weight in combination with said leaf spring wherein said weight is, during rotation of said clutch, subjected to a centrifugal force and, under the influence thereof, supplements a valve opening force of the spring itself.

4,271,952

SERRATION DETECTOR

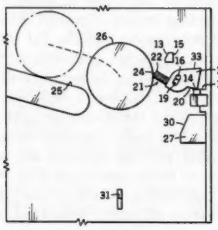
Edward L. Heim, Florissant, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 848,586, Nov. 4, 1977, Pat. No. 4,143,750. This application Apr. 3, 1978, Ser. No. 892,778

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ G07F *3/02, 3/04*

U.S. Cl. 194—97 R **4 Claims**



1. A serration detector in a selector assembly for serrated and non-serrated coins in a coin acceptor and located downstream of a rail on a support which directs a coin in a predetermined trajectory, the serration detector comprising:

(a) a pivotally mounted body, and

(b) a coil spring having one end attached to the body, the opposite end being provided by a coil disposed transversely to and engaging the edge of a coin moving in the predetermined trajectory, the end coil includes a portion transverse to the longitudinal axis of the coil spring engaging the serrations of a serrated coin to rotate the spring in one direction to change the trajectory and direct the serrated coin into one path, and engaging a substantially non-serrated coin to rotate the spring in the opposite direction and permit movement of the non-serrated coin in another path.

4,271,953

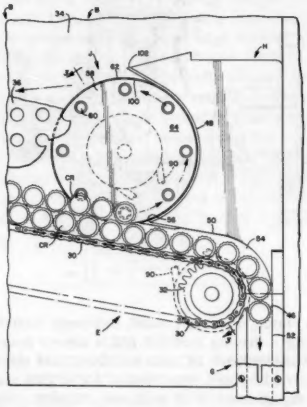
AUTOMATIC FEEDING HOPPER EMPLOYING AN ANTI-JAMMING MECHANISM

Donald C. Smith, Pottsville, Pa., assignor to Zapata Industries, Inc., Frackville, Pa.

Filed Sep. 11, 1978, Ser. No. 941,365

Int. Cl.³ B65G *1/02*

U.S. Cl. 198—347 **11 Claims**



1. In apparatus for feeding disk-like objects, the apparatus including a reservoir for storing the disk-like objects, the reservoir being dimensioned to receive a plurality of substantially horizontal rows of disk-like objects in a substantially vertical plane, a conveyor adjoining the reservoir for engagement with a substantial portion of the lowermost row of objects in the reservoir and for removing the disk-like objects from the reservoir, the disk-like objects being caused by gravity to engage the conveyor, means for driving the conveyor, an exit chute adjacent the conveyor to receive the disk-like objects in a single row, and a deflecting member positioned in the reservoir near the entrance to the exit chute to maintain the flow of disk-like objects in a single row from the conveyor into the exit chute, the deflecting member having an upper concave surface intersected by a lower curved surface leading into a side of the exit chute, the surfaces meeting at an edge located a distance above the surface of the conveyor slightly more than the diameter of a disk-like object, the improvement comprising magnetic means positioned with respect to the reservoir and related to the deflecting member and the conveyor for removing disk-like objects above said lowermost row of objects, and means for moving the magnetic means along a path adjacent to a portion of said upper concave surface in order to generate a centrifugal force sufficient to cause the disk-like objects attracted by said magnetic means to be ejected by said centrifugal force out into the reservoir when the disk-like objects pass the end of said upper concave surface.

4,271,954

BOTTLE ORIENTING APPARATUS

Garrison Gosney, Stamford, Conn., assignor to New England Machinery, Inc., South Norwalk, Conn.

Filed Apr. 3, 1979, Ser. No. 26,563

Int. Cl.³ B65G *47/24*

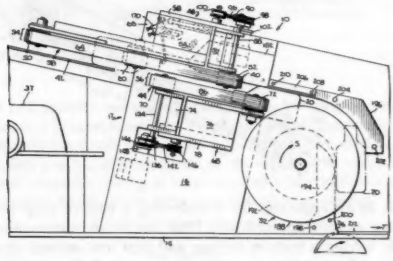
U.S. Cl. 198—399 **38 Claims**

1. An apparatus for moving unfilled open bottles in a first general direction and orienting said moving bottles from a first random open-end leading disposition with respect to said first direction, to an open-end trailing position with respect to said first direction and maintaining the orientation of unfilled moving bottles in a second random open-end trailing disposition with respect to said first direction comprising,

(a) means for initially dispensing said bottles in sequential order at a first predetermined rate of speed, in a tipped over position, in said first random open-end trailing disposition or said second random open-end leading disposition,

(b) first transport means for receiving and moving said initially dispensed bottles in said first and second random dispositions at a second predetermined rate of speed, said first transport means comprising a first pair of spaced endless movable belts confrontingly spaced apart a first predetermined distance,

(c) second transport means for receiving each of said bottles from said first transport means and moving each of said bottles at a third predetermined rate of speed for further



dispensation thereof, said second transport means comprising a second pair of spaced endless movable belts confrontingly spaced apart a second predetermined distance, said second pair of spaced endless belts being stepped below said first pair of spaced endless belts, and

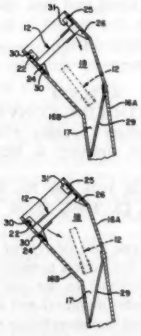
(d) means for distinguishing between said first and second random dispositions while said bottles are moving from said first transport means to said second transport means, said distinguishing means including means for maintaining the second random disposition of said bottles and converting said first random disposition of said bottles to open-end trailing position such that all bottles dispensed by said second transport means are in said open-end trailing disposition.

4,271,955

CASSETTE CORRELATOR

Richard G. Berube, Marlborough, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Oct. 26, 1979, Ser. No. 88,339
Int. Cl.[3] B65G *47/24*
U.S. Cl. 198—400 **16 Claims**



12. Apparatus for use in transporting and uniformly orienting cassettes of the type having a first relatively thick side section and a second opposite relatively thin side section, said apparatus comprising:

means for transporting cassettes so that said first and second side sections are disposed in a selected plane as they are being transported; and

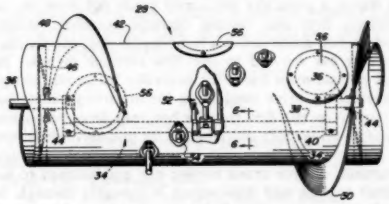
cassette orienting means for (a) receiving cassettes from said transporting means at a first predetermined location, (b) orienting said cassettes so that they are oriented identically, and (c) directing said identically oriented cassettes to a second predetermined location, said cassette orienting means comprising a chute for receiving cassettes at said first predetermined location and discharging the same cassettes at said second predetermined location, first means deployed about said upper end of said chute adjacent said first location and defining a channel disposed in the path of cassettes conveyed by said transporting means, said channel being sized to accommodate the second relatively thin side section of a cassette but not the first relatively thick side section of a cassette, and second means deployed about said upper end of said chute adjacent said first location and spaced from said channel and adapted to act as a support and pivot for cassettes disposed so that their second relatively thick side sections are adjacent to but spaced from said channel, said second means being located so as to be spaced from the first relatively thick side section of a cassette having its second relatively thin side section located in said channel, whereby a cassette having its relatively thin section supported by said second means can pivot by gravity about said second means and a cassette having its second relatively thin section disposed in said channel can pivot by gravity about said first means, in order that said cassettes will emerge from said chute so that said first relatively thick sections of said cassettes lead said second relatively thin sections of said cassettes as said cassettes advance to said second predetermined location.

4,271,956

FINGER CONSTRUCTION FOR A COMBINE PLATFORM AUGER

Eugene B. Hutchinson, East Moline, and James M. Van Auwelaer, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Dec. 17, 1979, Ser. No. 103,985
Int. Cl.[3] B65G *25/08*
U.S. Cl. 198—613 **5 Claims**



1. In a rotatable conveying element, such as a portion of the platform auger of a gathering platform for a mobile harvester, including a hollow drum portion with a wall having a plurality of guide apertures and at least one aperture for access to the interior of the drum and a fixed finger crankshaft mounted inside the drum, the axis of the shaft being parallel and eccentric to the axis of the drum, an improved bearing arrangement accessible through the access aperture, for journaling on the shaft and carrying an elongated conveyor finger, the finger extending through one of the guide apertures so that as the conveying element rotates, the finger rotates about the shaf. and alternately extends outwards and retracts with respect to the outer surface of the drum wall, comprising:

first and second bearing halves each half having:

a bearing portion having an inner semi-cylindrical bearing surface such that the first and second halves may be mated at an approximately diametric plane to define a cylindrical bore for journaling on the shaft;

a finger retaining portion extending from the bearing portion in a direction generally perpendicular to the axis of the bearing surface and approximately parallel to the diametric plane, at least one of the bearing halves including means for retaining an end of a finger between a pair of mating halves so that the finger extends generally radially with respect to the bearing surface;

a hinge portion extending from the bearing portion adjacent the bearing surface approximately diametrically opposite the finger retaining portion, each hinge portion including a hinge bore parallel to the axis of the bearing surface and disposed so that when the bearing halves are mated, the hinge bores of the respective first and second halves are co-axial;

a hinge pin for entering the hinge bores when the bearing halves are mated so that they are pivotably coupled together; and

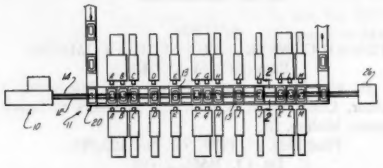
means for holding the finger retaining portions of the first and second bearing halves together, so that a finger engaged by them is retained and so that as the conveying element is rotated the finger and bearing halves are rotated together as a unit about the finger crankshaft.

4,271,957

MECHANICAL TRANSFER BAR DRIVE ASSEMBLY

Robert L. Osborne, Mount Clemens, Mich., assignor to LaSalle Machine Tool, Inc., Troy, Mich.

Filed Sep. 12, 1979, Ser. No. 74,902
Int. Cl.³ B65G *25/12*
U.S. Cl. 198—737 **3 Claims**



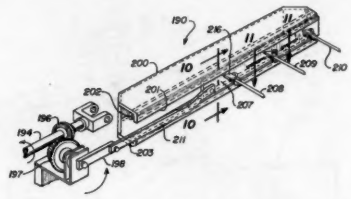
1. In a transfer mechanism for moving workpieces in a generally horizontal direction through a plurality of work stations, a main frame, a generally horizontal guide rail fixed on said main frame, first and second carriage members slidably mounted on said guide rail in a horizontally spaced relation, a first transfer bar secured to said first carriage member and mounted on said main frame for generally horizontal straight line movement, a drive mechanism for imparting simple harmonic motion to said first transfer bar, said drive mechanism comprising a drive shaft, drive means for said drive shaft operable to continuously rotate said drive shaft through full cycles of movement, a drive crank having one end secured to said drive shaft so that said drive crank is movable through full cycles of movement, a drive link pivotally mounted intermediate its ends on the other end of said drive crank, means pivotally connecting one end of said drive link to said first carriage member, coacting means on said frame and the opposite end of said drive link assuring continuous movement of said first transfer bar in one direction in response to predetermined half cycle movement of said drive crank, a second transfer bar arranged in a generally parallel side-by-side relation with said first transfer bar, said second transfer bar being secured to said second carriage member and mounted on said main frame for generally horizontal straight line movement parallel to said first transfer bar, and link means pivotally connected at one end to said drive crank and at the opposite end to said second carriage member operable to provide for movement of said second transfer bar concurrently with said continuous movement of said first transfer bar, said link means being arranged so that said transfer bars are moved through different distances in response to said predetermined half cycle of movement of said drive crank.

4,271,958

SHUTTLE CROSS CONVEYOR

H. Berton Stringfellow, Fresno, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 8, 1979, Ser. No. 64,930
Int. Cl.³ B65G *25/10*
U.S. Cl. 198—742 **8 Claims**



1. In an apparatus for transferring a bale of crop material along a predetermined path from one location to another, the bale having a bottom surface and first and second opposing sides adjacent thereto, said apparatus including an elongate support means for the bottom surface of the bale, an elongate guide means for the first side of the bale, said guide means being generally adjacent said support means, and means for engaging the second side of the bale and moving same along said support means and said guide means, the improvement wherein said means for engaging and moving comprises:

a bracket member extending substantially parallel to said predetermined path;

an elongate tine support movably affixed to said bracket member for linear movement along a line substantially parallel to said predetermined path;

a plurality of elongate tines each having a tine body with a primary axis parallel to the length thereof;

mounting means affixing said tines in linearly spaced relationship to each other to said tine support such that they extend generally towards said guide means, said mounting means permitting said tines to pivot in at least two planes relative to said tine support, said tines being operable to confer movement to the bale in directions corresponding to said at least two planes of movement of said tines and to penetrate the bale intermediate its length and to urge said bale toward said guide means; and

power means connected to said tine support for moving same reciprocably along said line, whereby a bale is engaged by said tines and moved in a succession of steps along said predetermined path.

4,271,959

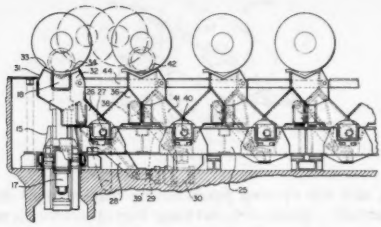
COIL ROTATING COOLING CONVEYOR SYSTEM

Werner W. Eibe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Filed Dec. 26, 1978, Ser. No. 972,903
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—777 **13 Claims**

1. A walking beam type coil conveyor for conveying hot coils of strip in the eye horizontal position along intersecting arcuate path segments normal to the coil axes comprising a plurality of first coil transfer members and a plurality of second coil transfer members, said members being pivotally positioned along the conveyor, each first member and downstream second member being pivoted about the same axis, each member having a coil supporting platform at its free end, first motive means attached to said first coil transfer membes and second

motive means attached to said second coil transfer members, said first and second motive means causing said first and second coil transfer members to swing toward and away from each other through said arcuate path segments so as to transfer coils from said first coil transfer members to downstream



second coil transfer members in areas of path segments intermediate their intersections with adjoining path segments and to transfer coils from said second coil transfer members to downstream first coil transfer members at intersections of said path segments, whereby during at least some of said transfers coils are caused to rotate about their axes but without rolling.

4,271,960

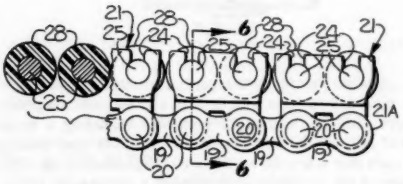
CONVEYORS AND CHAIN

Charles Chalich, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.

Continuation-in-part of Ser. No. 961,999, Nov. 20, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,328

Int. Cl.[3] **B65G** *17/24*

U.S. Cl. 198—779 **9 Claims**



1. A low contact pressure conveyor for packages such as containers and comprising

a pair of conveyor chains, each having

a plurality of elongate, plate links,

a plurality of pins each penetrating terminal end portions of two pairs of said links for chaining said links into first and second spaced apart side length portions,

said links and said pins cooperating for bearing tensile stress imposed on said chain,

said pins defining a pitch line for said chain, and

a plurality of plastic spacer means, each penetrated by two of said pins, each having a pair of sleeve portions for enclosing respective pins and cooperating with said pins and links penetrated thereby for spacing said side length portions, and each having a carrier portion projecting laterally from said chain intermediate said side length portions and defining clips means for receiving and gripping a rod-like object to be moved with said chain,

said clip means defining a supporting surface line spaced at a predetermined distance from said pitch line of said chain,

sprocket means mounting said chains for movement along parallel, spaced apart endless paths of travel defining a horizontal upper run,

a plurality of elongate axles each spanning said endless paths of travel and having terminal end portions gripped by a spaced pair of said clip means, said axles being arranged in a parallel array defining a horizontal supporting surface and movable with said chains,

roller means encircling said axles for supporting packages to be conveyed by movement of said chains and rotatable relative to said axles for accommodating movement thereof beneath supported packages in the event of blockage of movement of such packages, said roller means having a predetermined radius no more than said predetermined distance between said pitch line and said supporting surface line for maintaining free rotatability, and

drive means operatively connected with said sprocket means for driving said chains in coordinated movement for conveying supported packages while maintaining alignment of said axles.

4,271,961

BOX FOR TOOLS AND ACCESSORIES FOR TAPE CASSETTES, ESPECIALLY FOR MAGNETIC TAPE CASSETTES

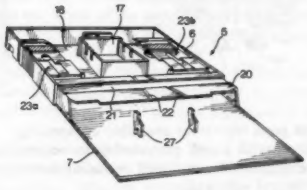
Anton Blankenmeister, Boehl-Iggelheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,142

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 7827773[U]

Int. Cl.[3] **B65D** *85/00, 77/00, 85/67*

U.S. Cl. 206—216 **8 Claims**



1. A box for tools and accessories for tape cassettes, especially for magnetic tape cassettes, intended for compatibility with a cassette filing system for cassettes in filing boxes, the box being substantially right parallelepipedal in shape and being provided with at least one compartment for tape material, a cutting tool and a splicing member, and small components employed in a tape cassette, wherein the box is at least of a size matching that of a tape cassette and can therefore be filed in the filing system, and contains as splicing member a splicing plate for the magnetic tape, as well as holding means for the tape cassette to be processed.

4,271,962

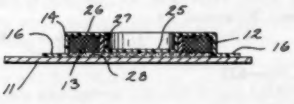
TAPE DISPENSER PACKAGE WITH ROLL RESTRAINING FRICTION DISC

Eugene R. Stepanski, Brown Deer, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Nov. 15, 1979, Ser. No. 94,681

Int. Cl.[3] **B65D** *85/672;* **B65H** *75/02, 77/00*

U.S. Cl. 206—411 **2 Claims**



1. In a tape package of the type comprising

(a) a base member, (b) a formed cover element having a housing portion, an exit section and a peripheral flange joined to the base member, and (c) a roll of adhesive tape

carried in the housing portion with part of the tape unwound from the roll and extending through the exit section of the cover element,

the improvement wherein:

(1) the housing portion of the cover element has a top wall spaced from a bottom wall, and a vertical wall connecting the top and bottom walls, and

(2) a friction disc of compressible felt, plastic foam or paper attached to the base member and arranged to engage an end surface of the roll of tape to apply restraining force thereaginst as the roll rotates upon removal of tape from the package.

4,271,963

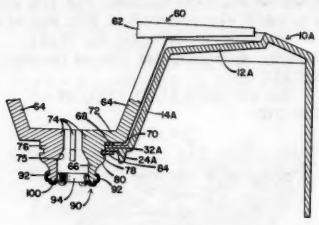
DISK PACK HANDLE MECHANISM

David E. Butz, Littleton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Filed Jun. 8, 1979, Ser. No. 46,636

Int. Cl.³ B65D *85/02*

U.S. Cl. 206—444 **8 Claims**



1. A disk pack top cover assembly comprising:

a top cover with a well provided in its center for receiving a rotatable handle, said well including a bottom wall and a peripheral side wall,

a handle disposed in the well and having a gripping bar disposed adjacent the top of the well,

a circular opening in the well bottom and an annular collar formed as an integral part of the handle and extending through the opening,

a shoulder formed on the handle above the collar to support the handle on the upper surface of the bottom wall of the well,

a cap over the lower end of the collar and extending upwardly on both the inside and outside of the collar,

an upwardly facing shoulder formed on the portion of the cap extending into the collar for engaging the locking bearings of a spindle on the disk pack bottom cover,

a plurality of axially extending pins formed on the lower end of the cap for engaging the spindle of the bottom cover so that rotation of the handle will turn the spindle to enable it to be screwed onto the disk pack drive,

and a washer engaging the collar and bearing against the bottom surface of the well bottom wall to retain the handle in place on the cover.

4,271,964

FOLDING CARTON STRUCTURE

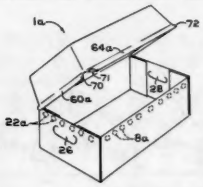
David B. Train, Midlothian, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 2, 1979, Ser. No. 81,166

Int. Cl.³ B65D *5/46, 5/54*

U.S. Cl. 206—633 **7 Claims**

1. A folded carton structure comprising a rectangular bottom wall; front, side and rear walls perpendicular to said bottom wall; said side walls each including a handle means, said handle means each being hingedly attached along a hinge line at an upper portion thereof to one of said side walls; a rectangular top wall of lesser length and width dimensions than said bottom wall; generally trapezoidal front, rear and side connecting walls descending from said top wall, said rear connecting wall being hingedly connected to said rear wall; and opening panels connected to said front and said side connecting



walls, said side opening panels having bottom edges thereof substantially colinear with said hinge lines of said handle means to thereby reinforce said handle means.

4,271,965

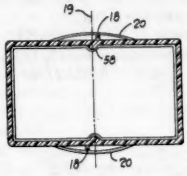
CONTAINER FOR FILM PROCESSING CHEMICALS

Michael I. Brambley, Mount Laurel; Herbert J. Myers, Maple Shade, and Januario R. Rios, Jr., Cherry Hill, all of N.J., assignors to Picker Chemicals Inc., Cherry Hill, N.J.

Filed Jul. 28, 1978, Ser. No. 929,174

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **8 Claims**



1. A container system for supplying chemicals to film processing mechanisms, comprising first and second composite containers, the first composite container including a large bottle and two smaller bottles attached to it, the three bottles shaped such that when the bottles are interconnected the exterior shape of the container approximates a rectangular prism, the second composite container including a large bottle and a smaller bottle adapted to be interconnected, the two bottles shaped such that when the bottles are interconnected the exterior shape of the container approximates at least the major portion of a rectangular prism, the containers including means for discriminating therebetween, the discriminating means comprising an exterior dimension of the first composite container which is greater than a corresponding exterior dimension of the second composite container and a groove with at least one open end formed in one surface of the first composite container, the groove being adapted to receive a projection when the container is inserted into a receiving cavity.

4,271,966

SORTING MACHINE

Kenneth H. Crowley, Northfleet, England, assignor to Gunson's Sortex Limited, London, England

Filed Jan. 11, 1979, Ser. No. 2,864

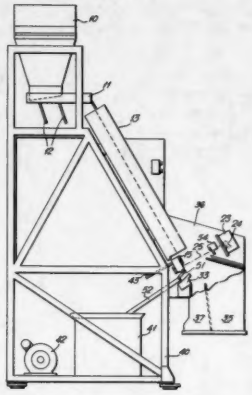
Claims priority, application United Kingdom, Jan. 11, 1978, 1069/78

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—576 **13 Claims**

1. A sorting machine having a member a part of which has a translucent viewing area; means for passing material to be sorted adjacent to but spaced from a surface of said translucent viewing area, said surface being inclined to the horizontal so

that the material may pass thereover under gravity; viewing means for viewing light or other electromagnetic radiation passing through the translucent viewing area; ejector means, controlled by said viewing means, for separating desired and undesired material; and means for directing over said surface a



film of washing liquid which thereafter passes by surface tension to a liquid removal zone which is located on a downwardly facing surface of said member, the liquid removal zone being disposed in a position in which the ejector means does not cause the material to be wetted by the liquid.

4,271,967

SYSTEM FOR SORTING ELONGATED MEMBERS

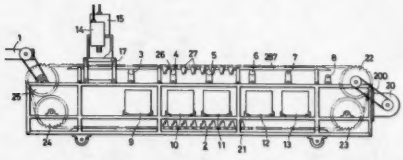
Osamu Matsuo; Keijiro Nakamura, and Toshimi Kodaira, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 28, 1979, Ser. No. 16,692

Claims priority, application Japan, Mar. 1, 1978, 53-23215; Mar. 1, 1978, 53-23216

Int. Cl.³ B07C *5/04*

U.S. Cl. 209—558 **38 Claims**



1. A method for sorting elongated pieces having a stem and a spike portion at one end comprising the steps of:

successively conveying said elongated pieces on conveyer means to a detection station;

detecting the outline of each of said elongated pieces as a still image by a sensor;

generating and processing signals from said still image to measure and determine, the length of said elongated member, the diameter of the stem of said elongated member and a ratio of the spike maximum diameter to the stem diameter; and

selectively comparing the determined parameters with predetermined reference values, and sorting said elongated pieces according to size.

4,271,968

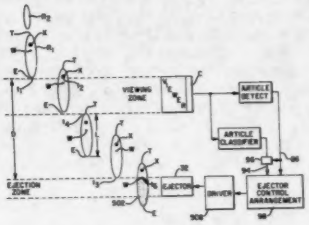
EJECTOR DWELL CONTROLLER FOR A SORTING APPARATUS

Thomas O. Mehrkam, and James F. Lockett, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Filed May 5, 1978, Ser. No. 903,058

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—564 **14 Claims**



1. In apparatus for sorting freely falling articles having random spacings therebetween, the apparatus being of the type having

(a) an article detector for generating an electrical article-detect signal, the first transistion of the article-detect signal being representative of the entry of a predetermined lead-point of the article into a viewing zone and the next opposite transition of the article-detect signal being representative of the exit of a predetermined trailing point on the article from the viewing zone;

(b) an article classifier for generating an electrical article-classification signal representative of a predetermined physical characteristic on at least a portion of an article; and

(c) an article ejector operative to direct an ejecting force to eject an article from an ejection zone spaced a predetermined distance from the viewing zone;

wherein the improvement comprises:

an ejector control arrangement responsive to the presence of the article-detect and article-classification signals for initiating the operation of the ejector to direct an ejecting force toward substantially the same predetermined portion functionally related to the length of each article being ejected from the ejection zone without regard to the presence of the predetermined physical characteristic on the portion of the article toward which the ejecting force is directed, the length of the article being related directly to the duration of the article-detect signal between the first and second transitions.

4,271,969

PORTABLE LONG BARREL FIREARM STAND FOR RIFLE OR SHOTGUN

Edward C. Gnesa, 2711 Ocotillo, Santa Maria, Calif. 93454

Filed Mar. 5, 1979, Ser. No. 17,190

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—64 **9 Claims**

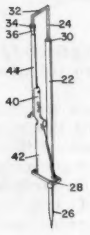
1. A portable long barrel firearm stand adapted for use with a rifle or shotgun having a barrel and a fixed stock comprising

an elongated support member having a hollowed out central area extending axially therethrough, said support member terminating in a pointed stud, said hollowed out central area extending from the pointed stud end to the other end of the support member and terminating in said other end in an aperture which defines a locking guide surface communicating with the hollowed-out central area in a plane substantially perpendicular to the axis of the hollowed out central area;

a guide and alignment support formed into a substantially U-shaped member wherein one leg thereof is an elongated guide support having an external cross section which is

adapted to be inserted into and passed through the aperture defining the locking guide surface and adapted to cooperate with the locking guide surface to prevent rotation therebetween, and the other leg thereof defining an alignment support which is substantially shorter than the one leg forming the elongated guide support, said alignment support being spaced a predetermined distance from the elongated guide support, said predetermined distance being equal to that distance required to enable a firearm having a barrel and a fixed stock to be held substantially parallel to the axis of the elongated support member;

a conical shaped, self-aligning support member having a base of the conical shaped portion which is connected to the alignment leg and an apex of the conical shaped portion forming an angular shaped tipped member having an acute angle which is less than 30° which is adapted to be inserted into the opening of a barrel engaging the inner peripheral edge surface of the barrel opening and concurrently aligning and supporting a barrel of a firearm in a substantially



parallel relationship relative to the center axis of the elongated support member; and

a butt support member fixedly mounted to the elongated support member adjacent the pointed stud, said butt support member being positioned a predetermined distance above the pointed stud to enable the butt end of a fixed stock of a firearm to be inserted into said butt support member, said guide and alignment support being positioned within said elongated support member with the conical support member on the same side as said butt support member, said guide and alignment support being adapted to have the elongated guide member slideably move within said hollowed out central area to form a movable support for a firearm defined by the sides of the conical support member engaging the opening of the barrel and the butt support member and wherein the external surface of the elongated guide member cooperates with the locking guide surface to prevent rotation therebetween due to the rotational moment applied thereto by the weight of the firearm.

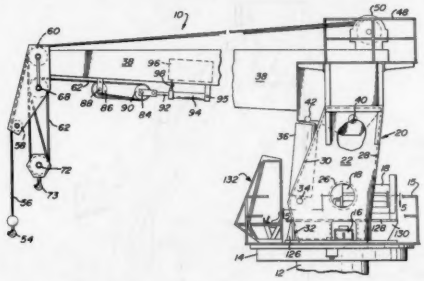
4,271,970

PEDESTAL CRANE

William H. Miller, Flowing Springs Rd., Birchrunville, Pa. 19421, and Jesse T. Grubb, Devault, Pa., assignors to William H. Miller, Birchrunville, Pa.

Filed Jan. 18, 1978, Ser. No. 870,310
Int. Cl.[3] **B66C** *23/06;* **B63B** *27/00*
U.S. Cl. 212—146 **8 Claims**

1. A pedestal crane which is compact and constructed so as to have a turning radius less than about 8 feet comprising a base, a platform above and supported by the base for 360 degree rotation about a vertical axis, a mast rigidly connected to an upper surface on said platform for rotation therewith, means coupled to the platform for rotating said platform and mast about said axis, said mast including a pair of upright walls, a prime mover disposed between said walls adjacent one end thereof, a first tank for containing fuel for said prime mover, a second tank for containing hydraulic fluid, at least one upright cylinder containing a piston therein, the lower end of said cylinder being pivotably connected to said mast and being between said walls adjacent the other end thereof, a boom having one end pivotably connected to the upper end portion of said mast, said piston having a piston rod pivotably connected to said boom, a winch on said boom adjacent said one end thereof, a cable extending from said winch to a pulley on the other end of said boom, an operator cab supported beneath said boom for rotation with said platform, said cylinder being



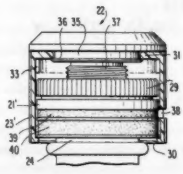
between said cab and said prime mover, said cab having controls for operating said prime mover and winch, a guard rail adjacent the periphery of said platform, and a dynamic load compensator supported by said boom between its ends for absorbing dynamic shocks on said cable, said load compensator including a fluid accumulator supported by said boom between its ends, said accumulator being coupled to said cable for directly controlling the effective length of said cable as a function of dynamic shock loads on said cable.

4,271,971

SAFETY CAP FOR CONTAINERS

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415

Filed Apr. 8, 1980, Ser. No. 138,651
Int. Cl.[3] **B65D** *55/02*
U.S. Cl. 215—220 **12 Claims**

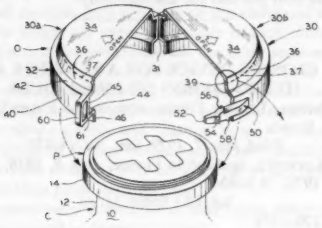


1. A safety cap for containers comprising an inner cap section having screw-threads for rotational engagement with a threaded container, the inner cap section having an additional screw-threaded portion and having axially extending locking and driving means thereon, an outer cap section engaging over the inner cap section and being axially shiftable relative to the inner cap section and being rotatable with and relative to the inner cap section selectively at certain times, and a rotational actuator element having swiveled engagement with the outer cap section and having a screw-threaded portion for threaded engagement with said additional screw-threaded portion of the inner cap section, and the outer cap section having axially extending locking and driving means thereon which are shiftable into and out of interlocking engagement with said locking and driving means of the inner cap section in response to relative axial movements of the inner and outer cap sections induced by the rotation of said rotational actuator element.

4,271,972
TAMPERPROOF OVERCAP

David L. Thor, Naperville, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 24, 1979, Ser. No. 60,147
Int. Cl.[3] B65D *49/12*
U.S. Cl. 215—251 11 Claims

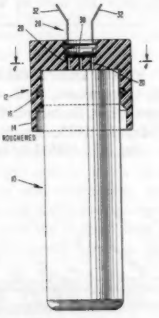


1. In a closure arrangement for a container having a neck with an outwardly projecting annular flange and a plug type closure adapted to be received within said neck, a unitary, molded plastic, tamperproof overcap, comprising:
   (a) a hollow body including a pair of generally similar, semi-cylindrical body sections having corresponding ends joined by integral hinge means;
   (b) said body sections including a detachably removable top wall and a locking ring adapted to snugly engage said container neck flange;
   (c) said locking ring including integral locking means, for interconnecting the free ends thereof, which are readily attachable to each other but which cannot be detached from each other without being destroyed.

4,271,973
STERILITY TESTING VESSEL

Daniel A. Quagliaro, Brooklyn, N.Y., and Walter E. Stiesi, Keansburg, N.J., assignors to United States of America, Washington, D.C.

Filed Mar. 19, 1979, Ser. No. 22,220
Int. Cl.[3] B65D *51/16*
U.S. Cl. 215—308 10 Claims

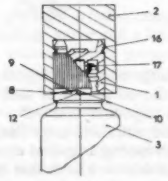


1. A closure for a container suitable for use in testing the sterility of matter, said container having a cylindrical wall defining a container opening, the closure comprising a cap having a top portion and a cylindrical skirt portion depending from said top portion for fitting over said container wall, said skirt portion having a lower part with an increased diameter to provide clearance between the container and the lower skirt portion, said top portion having inner and outer surfaces and a recess formed in said top portion, said recess extending partially through said top portion from said outer surface, said recess including a peripheral wall and a base, passage means extending from said base of said recess to said inner surface of said top portion, a filter means receivable on said base of said recess and a resilient retention clip engagable with said peripheral wall of said recess for retaining said filter means in place, said retention clip including at least one manually operable resilient member extending out from and substantially above said recess when said clip is in place to readily permit selective removal of said clip.

4,271,974
BOTTLE WITH PREALIGNED CLOSURE

Yves Quinard, Boisemont, France, assignor to Parfums Rochas, Paris, France

Filed Jul. 12, 1979, Ser. No. 57,256
Claims priority, application France, Oct. 17, 1978, 78 29505
Int. Cl.[3] B65D *41/04*
U.S. Cl. 215—331 3 Claims



1. A bottle with a prealigned closure means comprising a bottle with a neck on the top thereof provided with a threading and a collar at the base thereof having stop shoulders, said shoulders each having an oblique side with an associated inclination angle, a capsule with a closed end provided with an interior threading adapted to engage the threading of the bottle neck, a hollow cap means with the capsule axially disposed therein and provided with means to immoveably secure the capsule with respect to the cap, the lower edge of the capsule being provided with two diametrically opposite grooves in the form of a right-angle triangle whose side opposite the smaller of the acute angles is parallel to the axis of the capsule, the said smaller acute angle determining the inclination of the oblique side of the said right-angled triangle, said smaller acute angle being greater than the inclination angle of the stop shoulders of the bottle with which the grooves are destined to cooperate.

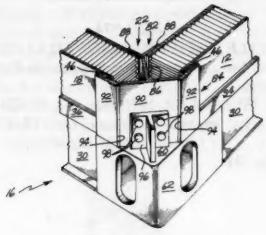
4,271,975
LIGHTWEIGHT CARGO CONTAINER AND FITTINGS

Clyde R. Ketner, Sumner, and Philip C. Whitener, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 23, 1979, Ser. No. 69,218
Int. Cl.[3] B65D *6/28, 90/08*
U.S. Cl. 220—80 3 Claims

1. A wall connecting fitting for a lightweight cargo container, said fitting comprising
   an outer flange;
   an inner flange; and
   a web integrally connecting the outer and inner flanges;
said outer flange comprising
   a generally rectangular, substantially planar central portion, a first outer flange portion integrally attached to one edge of said central portion and a second outer flange portion integrally attached to an opposite, parallel edge of said central portion, the first and second outer flange portions extending obliquely with respect to said central portion said first and second outer flange portions each having an inner and outer surface; said web being integrally connected at one end thereof to one side of said central portion substantially midway between the edges and extend-

ing generally perpendicularly with respect to said central portion; and a reaction surface at the connection of each of said first and second outer flange portions with said central portion, each reaction surface being located on a side of said central portion opposite said one side, protruding outwardly therefrom and extending substantially perpendicular to the outer surface of the respective outer flange portion, for applying a clamping tool thereagainst; said inner flange comprising



a pair of inner flange portions integrally connected to each other and to the other end of said web and extending obliquely with respect to said web;

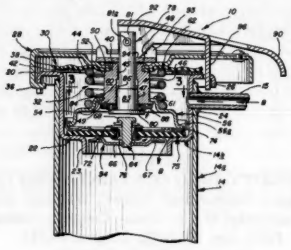
at least one of said outer and inner flange portions on each side of said web having a tapered cross-section in a direction away from said web such that the distance between the outer and inner flange portions on each side of said web increases in a direction away from said web.

4,271,976

COMBINATION PRESSURE RELEASE COOLING CAP AND RECOVERY OF COOLANT

Timothy Detwiler, Dixon, Ill., assignor to E. Edelmann & Co., Skokie, Ill.

Filed Nov. 13, 1979, Ser. No. 93,453
Int. Cl.[3] B65D *51/16*
U.S. Cl. 220—206 **5 Claims**



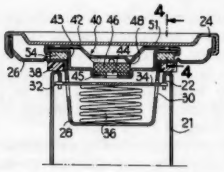
1. An improved radiator cap for use with a coolant recovery system that includes a filler neck provided with spaced upper and lower valve seats and a coolant flow passageway communicating from a reservoir through a side wall of the filler neck in the region between said spaced valve seats; said radiator cap comprising spaced upper seal means and lower seal means adapted for respective sealing against said upper and lower valve seats, the upper seal means being constructed to prevent loss of temperature-expanded coolant and ingestion of atmospheric air therepast; the lower seal means carrying an openable vent valve through which hot gas and temperature-expanded coolant may be selectively vented to said coolant flow passageway and through which reduced temperature coolant may be siphoned back into the radiator; and means for selectively actuating said vent valve to open position including an elongated annular body, a vent pin arranged for reciprocable movement in the bore of said elongated annular body, axially spaced portions of the annular body lying closely adjacent said vent pin to define therebetween axially spaced, restricted annular passageways but with an enlarged, axially elongated, annular passageway located between said restricted annular passageways, and an O-ring seal carried on said vent pin and effecting a rolling seal between said vent pin and the elongated annular body within said enlarged, axially elongated, annular space to prevent leakage of gas and liquid between the vent pin and the annular body.

4,271,977

CLOSING DEVICE FOR A TANK FOR A HYDROCARBON OR LIKE LIQUID

Gerard Saigne, Larche, France, assignor to Paumellerie Electrique, France

Filed Aug. 7, 1979, Ser. No. 64,475
Claims priority, application France, Aug. 8, 1978, 78 23359; Feb. 26, 1979, 79 04804
Int. Cl.[3] B65D *51/16*
U.S. Cl. 220—371 **15 Claims**



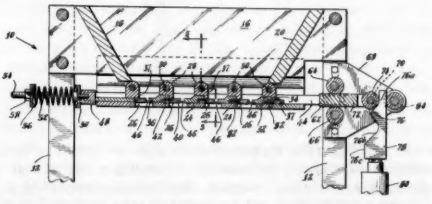
1. A closing device for an inlet aperture of a tank containing hydrocarbon, propane or like product, the device comprising a cover having an inner rib, a base, means defining an extension which has a first end which is connected to the base and a second end which is adapted to extend into the inlet aperture of the tank, the base and the cover defining a cavity, first passage means putting the cavity in communication with the exterior of the cover, means defining an orifice at said first end of the extension, an air filtering element disposed in said orifice, a sealing ring disposed in the cavity and clamped between said base and the filtering element and said inner rib of the cover, and second passage means for putting said orifice in communication with the interior of the tank by way of said extension.

4,271,978

STICK DISPENSER

Edward D. Cottrell, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed May 31, 1979, Ser. No. 44,110
Int. Cl.[3] B65H *3/44*
U.S. Cl. 221—243 **15 Claims**



1. Apparatus for dispensing sticks at a plurality of predetermined locations comprising:

hopper means including

a fixed bottom plate assembly having a plurality of elongated openings disposed at predetermined locations therealong,

a reciprocable upper plate assembly slidably received on the upper surface of said fixed bottom plate assembly, said slidable and reciprocable upper plate assembly including a plurality of elongated openings adapted to be placed in registration with the openings in said fixed bottom plate assembly for dispensing a plurality of sticks disposed within said hopper through each pair of registered openings,

said upper plate assembly including sections having first and second portions between each of the elongated openings therein which are movable relative to each other and to the first and second portions of the other sections,

whereby upon one of said portions in each section meeting an obstruction placed in its path to movement, the preceding and succeeding portions in adjacent sections of said upper plate assembly will continue its movement enabling registration of at least certain ones of said openings in said upper plate assembly with certain ones of said openings in said bottom plate assembly, and

means operatively connected to said upper plate assembly for reciprocably driving the same.

4,271,979

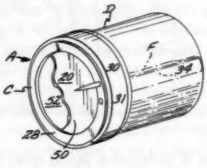
TOOTHPICK DISPENSING DEVICE

Curtis T. Manz, P.O. Box 2466, Long Beach, Calif. 90801

Continuation-in-part of Ser. No. 922,768, Jul. 7, 1978, Pat. No. 4,197,965. This application Jul. 9, 1979, Ser. No. 55,541

Int. Cl.³ B65D *85/20*

U.S. Cl. 221—288 **3 Claims**



1. In combination with a receptacle having a cylindrical side wall that has external threads adjacent the open end thereof and that contains a plurality of toothpicks, an assembly to permit said toothpicks to be discharged from said container one by one each time said receptacle is inverted with said assembly in a downward position, said assembly including:

a. a first portion that includes a circular plate that has a circular lip extending downwardly therefrom, said lip extending downwardly in said open end and slidably engaging the interior surface of said side wall, an elongate tooth pick receiving member that extends downwardly from said circular plate, said member having a first side surface of transverse convex shape that abuts against the interior surface of said receptacle, said member having first and second end surfaces in which first and second longitudinal grooves are defined that are in communication with first and second openings formed in said plate; and

b. a second portion that includes an internally threaded ring that removably engages said external threads, said ring including a circular lip that projects inwardly therefrom and engages a peripheral portion of said plate outwardly from said first and second openings, and one of said toothpicks in said receptacle being disposed in either said first or second grooves depending upon which one is uppermost when said receptacle is moved from a vertical to a downwardly inclined position, and said toothpick sliding by gravity through said opening in said plate that is operatively associated with said groove in which said toothpick is disposed, and one of said toothpicks being so dispensed each time the above-described operation is repeated.

4,271,980

MAGAZINE FOR PLATELIKE ARTICLES

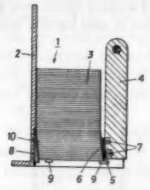
Edwin Frieser, and Jürgen Novotny, both of Graz, Austria, assignors to ELBAK Batteriewerke Gesellschaft mbH, Graz-Puntigam, Austria

Filed Nov. 13, 1978, Ser. No. 960,097

Claims priority, application Austria, Nov. 17, 1977, 8236/77

Int. Cl.³ B65G *59/06*

U.S. Cl. 221—297 **7 Claims**



1. A magazine for platelike articles, comprising

a wall defining a storage space and a lowermost portion,

a rigid unyielding inclined surface projecting into said storage space and extending downwardly and laterally inwardly with respect to said storage space,

withdrawable claw means defining the lower end of said storage space and disengagably supporting superimposed platelike articles in said storage space,

means comprising a pivotally movable pressure-applying lever is disposed on at least a side of said storage space opposite to said inclined surface and arranged to clear a lowermost of said articles and to apply pressure to a second platelike article from the bottom in said storage space so as to retain the second platelike article from the bottom and to support platelike articles superimposed thereon in said storage space pressing articles against said rigid unyielding inclined surface,

said inclined surface is disposed only at said lowermost portion of said wall and extends lower than said lever,

said claw means and said pressure-applying lever being disengageable from said platelike articles in said storage space in alternation to effect a delivery of successive ones of said superimposed platelike articles from said storage space,

a pressure-applying plate disposed on said pressure-applying lever, said pressure-applying plate has an engaged surface which engages the articles, said pressure-applying plate engages a lower portion of said pressure-applying lever such that said engaging surface of said pressure-applying plate extends parallel to said inclined surface and is engageable with said articles, adjacent the bottom, and

compression springs are mounted on said pressure-applying lever, said compression springs extend at right angles to said inclined surface and bias said pressure-applying plate toward said inclined surface.

4,271,981

GASOLINE PUMP CONSTRUCTION

James T. Bennett, Hartford, Wis., assignor to Uni-Pump, Inc., Butler, Wis.

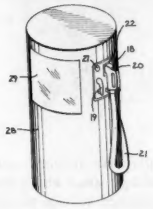
Filed Jun. 21, 1979, Ser. No. 50,680

Int. Cl.³ B67D *5/26*

U.S. Cl. 222—32 **1 Claim**

1. In a fuel dispensing mechanism having a fuel pump and a fuel dispensing valve, a supporting structure, a pair of volume and cost registers disposed in side-by-side relation on the supporting structure, a reset control mechanism disposed outwardly of each register and having an operable connection to the respective register, each reset control mechanism being operable to clear the respective register and activate the fuel pump and dispensing valve, each reset control mechanism including a first control shaft disposed on the opposite side of

the reset control mechanism from the register, a generally cylindrical housing to enclose the supporting structure and having a window to view the registers, said supporting structure having openings at opposite sides thereof, a face plate enclosing each opening, an operating handle disposed outwardly of each face plate, each operating handle being rotatable between a first "off" position and a second "on" position, a second shaft connected to each handle and journalled for rotation in said face plate, said second shaft being offset from the corresponding first shaft, a first gear on said first shaft and a second gear on said second shaft, said gears being in engagement whereby rotation of said handle will operate through said



gears to rotate said first control shaft, each set of first and second gears being located in the space between the outer extremity of the corresponding reset mechanism and the face plate, each face plate having a receptacle for a hose nozzle, said operating handle being arranged such that the hose nozzle must be removed from the receptacle in order for the operating handle to be moved from the "off" to the "on" position, movement of the operating handle from the "off" position to the "on" position operating said reset control mechanism to clear the register and activate the fuel pump and dispensing valve so that fuel can be dispensed, and movement of the operating handle from said "on" position to said "off" position acting to deactivate the fuel pump and said dispensing valve.

4,271,982

GLUE DISPENSER

Eugene J. Niksich, Aurora, Ohio, and J. Larry Underwood, Woodstock, Ga., assignors to Dynatron/Bondo Corporation, Atlanta, Ga.

Filed Sep. 14, 1979, Ser. No. 75,805

Int. Cl.[3] B65D *17/44;* E65D *35/54*

U.S. Cl. 222—83 **6 Claims**

1. A dispenser for glue or the like comprising a container with an externally threaded spout defining an outlet opening therethrough, a nozzle assembly for attachment to said spout, said nozzle assembly comprising an internal nozzle element including an outlet opening extending therethrough a funnel shaped cam surface which defines part of said outlet opening and internal threads for engaging the threads of the externally threaded spout, an external nozzle element mounted about said internal nozzle element and including an outlet opening extending therethrough, and a deformable nozzle valve including an end portion protruding from inside said external nozzle element and a deformable portion in sliding engagement with the funnel-shaped cam surface of said internal nozzle element whereby when the protruding end portion of the nozzle valve is pushed inwardly with respect to the outlet opening of said external nozzle element said deformable portion of the nozzle valve deforms against the funnel-shaped cam surface to permit the nozzle valve to move inwardly with respect to the external nozzle element and the contents of the container are movable through the outlet opening of the spout and the outlet openings of the internal and external nozzle elements.

4,271,983

LIQUID-WITHDRAWING DEVICE

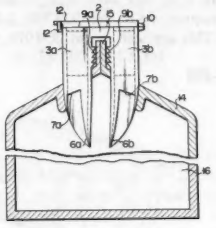
Nobuyuki Takemura, Nishinomiya, and Ichiro Fukuchi, Takatsuki, both of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed May 8, 1978, Ser. No. 903,920

Claims priority, application Japan, May 16, 1977, 52-62477[U]; May 16, 1977, 52-62478[U]; Aug. 2, 1977, 52-103727[U]

Int. Cl.[3] B65D *5/74*

U.S. Cl. 222—85 **4 Claims**



1. A device for withdrawing liquid from a paper container having an upper wall provided with a fin-shaped projection, said device comprising:

a pair of parallel hollow tubular bodies connected to each other at adjacent ends thereof, forming therebetween a grooved portion having inwardly directed tooth-shaped projections adapted to be engaged with the fin-shaped projection of the paper container;

one of said hollow bodies having an open head for withdrawing the liquid housed in the paper container, the other having an open head for venting air into the container; and

a partition wall serving to reinforce each hollow body provided in the free end portion of the hollow body in a manner to separate the interior thereof into two sections, the end of said partition wall at the end of the hollow body being formed into a sharp edge portion tapered from outside toward the grooved portion for piercing through the upper wall portion of a container adjacent the fin-shaped projection.

4,271,984

DEVICE FOR DISPENSING TWO PASTY SUBSTANCES IN ADJUSTABLE PROPORTIONS

Luc Ducros, and Roger Navarro, both of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed Apr. 6, 1979, Ser. No. 27,731

Claims priority, application France, Apr. 6, 1978, 78 10246

Int. Cl.[3] B65D *35/22*

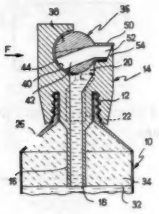
U.S. Cl. 222—94 **9 Claims**

1. For use with a deformable tube containing two pasty substances in two different regions within the tube, a device for dispensing the two pasty substances in adjustable proportions, the device comprising:

a body for mounting on the tube, the body having two passages communicating respectively with the two regions with the tube, each passage terminating in an outlet located in a surface of the body,

a valve member mounted for pivotal movement with respect to the body about an axis perpendicular to the direction of flow of the substances through the passages in the body, a surface of the valve member being cylindrical and having an axis of curvature colinear with the pivot axis of the valve member, the cylindrical surface fitting tightly against the surface of the body in which the outlets are located, and

at least one through passage in the valve member extending



between an inlet, located in the cylindrical surface, and a common outlet nozzle for both pasty substances,

the valve member having one extreme position in which its cylindrical surface closes both outlets and another extreme position in which the outlets are open to a maximum extent to the common outlet nozzle, and the pivotal position of the valve member between the two extreme positions determining the degree of alignment of the inlet with at least one of the outlets, the non-aligned portion of that outlet being closed by the cylindrical surface,

whereby the ratio of the open areas of the outlets, and hence the proportions of the two pasty substances reaching the common outlet nozzle, depends upon the pivotal position of the valve member with respect to the body.

4,271,985

APPARATUS FOR DISPENSING A FLUENT SUBSTANCE FROM A FLEXIBLE CONTAINER DISPOSED BETWEEN A PAIR OF OPPOSED PLATES

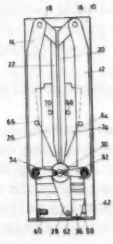
John V. Andersen, 210 Melkbos, Princes Ave., Windsor, Randburg, Transvaal, South Africa

Filed Feb. 23, 1978, Ser. No. 880,492

Claims priority, application South Africa, Jun. 10, 1977, 77/3496

Int. Cl.[3] **B65D** *35/28, 35/26*

U.S. Cl. 222—96 **6 Claims**



1. Apparatus for dispensing a fluent substance from a flexible container, said apparatus comprising:

a frame;

a pair of opposed plates pivotally secured at their upper ends to the frame;

a pair of arms pivotally secured at their upper ends to the frame with the plates between them;

two wedge shaped members, each member being located with its wedge pointing downwardly between an arm and an adjacent plate;

means for moving the arms towards one another, and thereby through the action of the wedge shaped members so to move the opposed plates towards one another as to apply a compressive force to the sides of a container located between the opposed plates, said means comprising a lever pivotally attached to the frame, and two linkage members, each linkage member being pivotally attached to the lever and to the lower end of one of the arms; and

a support plate for supporting the neck of the tubular container placed upside down between the opposed plates, the support plate including a recess into which the neck of the tubular container is insertable, an aperture being formed in the base of the recess for the passage of fluent substance discharged from the container.

4,271,986

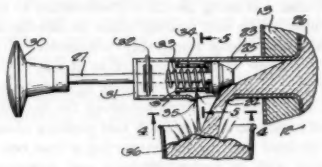
DRINK DISPENSER SPIGOT WITH SPLASH DEFLECTOR

Earl M. Stecker, Kiel, Wis., assignor to Stoelting, Inc., Kiel, Wis.

Filed Nov. 17, 1978, Ser. No. 961,802

Int. Cl.[3] **B67D** *3/00*

U.S. Cl. 222—151 **2 Claims**



1. In a drink dispenser spigot comprising a barrel, a valve plunger, a stem connected to said plunger for guiding said plunger, a spring arranged around said stem for urging said plunger to a closed position, and a spout opening in a sidewall of the barrel, the improvement comprising a tubular splash deflector in said barrel having at one end an end wall, the other end of said deflector being open, said end wall engaged with said spring and having an aperture for receiving said stem and said deflector having a cylindrical wall defining a hollow interior, said cylindrical wall having a sufficient length to enclose a portion of said spring and obstruct said spout opening thereby partially blocking drink from splashing into the barrel through said spout opening and onto said spring, said splash deflector being mounted upon said stem so as to be wholly movable therewith and including an annular flange wiper at said open end which wipes drink splash from the inside of the barrel and out through the spout opening during actuation of the valve plunger.

4,271,987

DEVICE FOR DISPENSING BEVERAGES

Birger Eriksson, Tyresö, and Gösta Boström, Farsta, both of Sweden, assignors to EMAC AB, Stockholm, Sweden

Filed Oct. 13, 1978, Ser. No. 951,262

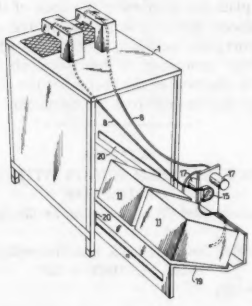
Claims priority, application Sweden, Oct. 18, 1977, 7711743

Int. Cl.[3] **B67D** *5/64*

U.S. Cl. 222—160 **3 Claims**

1. An apparatus for pouring beverages, such as milk, juice, etc., from relatively large beverage packages holding, for

example, 20 liters or more, and having an outlet, said apparatus comprising: a pouring counter having a pouring place; a beverage dispensing hose mounted in said apparatus near said counter having an inlet end and an outlet end, said inlet end adapted to be connected to the outlet of the beverage package; a motor operated rotary pump means mounted in the apparatus with a rotary pump member adapted to engage and operate on said hose; means under the counter for accommodating at least one beverage package; said hose being integral between its two ends; said apparatus having means for supporting said hose including guide means which enable passage of a portion of said hose from below to above said counter and detachable clamp means above said counter for holding and suspending a terminal portion and outlet end of said hose above said counter



with the outlet end being directed downwardly to provide a pouring outlet above said pouring place; an intermediate portion of said hose being removably connected in operative assembly in a liquid transporting section of said pump means with the rotary pump member engaging against the outside of said hose; said means for accommodating the beverage package is shelf means secured beneath said pouring counter providing an inclined shelving for supporting at least one package in a position with its outlet obliquely and downwardly directed; and means under said pouring counter are provided with guide bars for slidably supporting the shelving for movement into inserted and projected positions whereat said shelving can be loaded with said at least one package in a position while out from under the counter.

4,271,988

DISPENSING OF FLUENT MATERIALS

Anthony R. Clausen, Johannesburg, South Africa, assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Jul. 5, 1978, Ser. No. 922,023

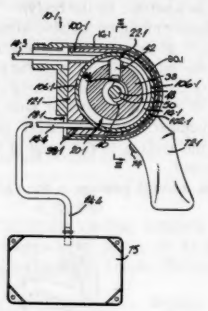
Claims priority, application South Africa, Jul. 7, 1977, 77/4095

Int. Cl.³ F04B *43/12*

U.S. Cl. 222—214 **23 Claims**

1. A dispensing device for use in dispensing measured quantities of fluent material through a resiliently compressible dispensing tube, the device comprising a housing having a compression zone and a cartridge zone for removably receiving a unitary cartridge having a dispensing tube engaged therethrough, collapsing means located in the cartridge zone in said compression zone for collapsing said tube, and displacement means for displacing the collapsing means to advance the compression zone along a compression path to dispense fluent material through the tube; and,

adjustment means, including an adjustable cam member to cooperate with the collapsing means and control the effec-



tive length of a compression path during operation of the collapsing means.

4,271,989

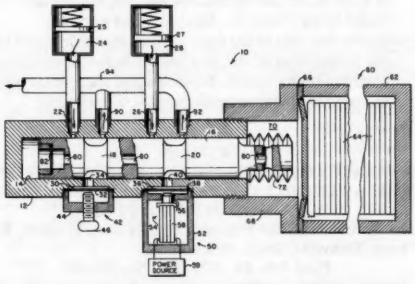
MICRO-METERING SYSTEM

Cormac G. O'Neill, Contra Costa County, and Parker C. Smiley, Alameda County, both of Calif., assignors to Physics International Company, San Leandro, Calif.

Filed Mar. 27, 1979, Ser. No. 24,316

Int. Cl.³ G01F *11/08*

U.S. Cl. 222—282 **3 Claims**



1. An apparatus for controlling the flow of fluid comprising

means defining a primary housing having an inlet port and an outlet port,

means defining a first variable volume cavity in fluid communication with said primary housing,

means for varying the volume of said cavity according to pressure of said fluid,

means for limiting the volume of said variable volume cavity comprising

means defining a support bracket,

an electroexpansive member having one end bearing against said support bracket and having the other end bearing against said means for varying the volume of said cavity according to pressure of said fluid, and

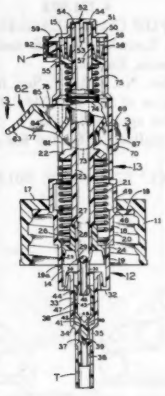
means for applying a voltage across said electroexpansive member whereby said electroexpansive member contracts and expands against said means for varying the volume of said cavity to limit the volume thereof, and

means for alternately communicating said inlet port with said cavity and said outlet port with said cavity.

4,271,990
PUMPING SYSTEM FOR DISPENSING PRODUCT FROM A CONTAINER

Louis F. Kutik, Ft. Lauderdale, and Howard E. Cecil, Miami, both of Fla., assignors to Security Plastics, Inc., Miami Lakes, Fla.

Filed May 12, 1978, Ser. No. 905,380
Int. Cl.³ B05B *11/00*
U.S. Cl. 222—321 10 Claims



1. In a pumping system for use with a container for product and a dip tube to dispense product from the container through the dip tube, said pumping system including:

a manually actuated pressurizing pump including first and second check valves and a first spring-loaded piston and cylinder assembly for withdrawing a quantity of product from the container through said dip tube and said first check valve during an intake stroke and for pressurizing said quantity of product during a pressurizing stroke;

storage compartment means including a second spring-loaded piston and cylinder assembly expandable for storing under a pressure determined by said second spring-loaded assembly a quantity of pressurized product received through said second check valve from said pressurizing pump;

a discharge nozzle defining a restricted outlet orifice;

said storage compartment means being functionally located with said restricted outlet orifice at its outlet and said second check valve at its inlet from said pressurizing pump;

said restricted orifice controlling the rate of product discharge therethrough so as to allow only a portion of the pressurized product to be dispensed from said pump during the pressurizing stroke, when pumping relatively rapidly, the remainder of said product being stored in said storage compartment means to be dispensed during the subsequent intake stroke of said first spring-loaded piston by contraction of said storage compartment means to maintain the stream or spray from the orifice when the pressurizing pump is receiving product on its intake stroke;

said storage compartment means including an outlet opening in communication with said outlet orifice, said outlet opening being disposed relative to said second spring-/loaded piston so that it is opened and closed by movement of the second spring-loaded piston thereby completely controlling the flow to the restricted orifice;

the improvement wherein:

said second spring-loaded piston and cylinder assembly includes a second spring acting at one end against said second piston to exert pressure on the product in said storage compartment means; and

further comprising:

hollow stem means reciprocable during said intake and pressuring strokes, said stem means being frictionally coupled to said second piston and operatively coupled to said first piston so that said pistons tend to move substantially in unison during said intake and pressurizing strokes, said hollow stem means providing a passageway for the flow of product from said second check valve to said storage compartment means; and

means operatively coupling the opposite end of said second spring in said second spring-loaded piston and cylinder assembly to said stem for movement of said spring substantially in unison with said stem;

said second piston being displaceable along said stem against the drag of the friction coupling to act on said second spring in the second spring-loaded piston and cylinder assembly and thereby compensate for pressure changes in said storage compartment means; and

wherein

said stem means has an intermediate portion; said first spring-loaded piston and cylinder assembly includes a first spring engaged between said intermediate portion of said stem means at its upper end and said first cylinder at its lower end;

said second spring in said second spring-loaded piston and cylinder assembly is operatively engaged between said intermediate portion of said stem means at its lower end and said second piston at its upper end; and

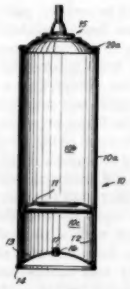
said second piston is movable downward to open said outlet opening and upward to close said outlet opening;

whereby when said pumping system is pumping air during priming of said pump, the downward movement of said stem means during the pressurizing stroke of said first piston and cylinder assembly permits the lower end of said spring in said second spring-loaded piston and cylinder assembly to move down to reduce the pressure on said second piston and enables the latter to move down to open said outlet opening and allow air to escape from said storage compartment means to said outlet orifice for aiding in priming the pumping system.

4,271,991
LOW PRESSURE DISPENSING

George B. Diamond, Anthony and Woodglen Rds. R.D., Glen Gardner, N.J. 08826

Continuation-in-part of Ser. No. 877,979, Feb. 18, 1978, Pat. No. 4,171,757, and a continuation of Ser. No. 693,768, Jun. 8, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 964,892
Int. Cl.³ B67D *1/04*
U.S. Cl. 222—389 10 Claims



1. As an article of manufacture, a self contained, pressurized barrier container having a thin side wall and thin end walls that are of materially reduced thickness as compared to a conventional pressurized container and will not withstand internal pressures above 120 psig, said container being sealed at the

bottom end and having a discharge valve at the other end, a movable member in the container serving as a gas tight sealing barrier therein for defining two chambers, one chamber communicating with the valve and containing a product for discharge at the pressure of a propellant within the other chamber of the container, said member having such strength as to conform to the wall of the container and also to seal therewith and said side wall being sufficiently flexible as to conform to said member, and said valve being so constructed, on opening, as to afford an effective flow-through cross-sectional outlet area allowing a useful rate of discharge of at least 0.8 g per second at the propellant pressure and maintaining an effective flow rate at the reduced pressures following incremental discharges from the container; said container side wall and end walls being composed of a metal selected from the group consisting of aluminum and steel, with the side wall thickness being in the range of 0.003" to 0.009", and the bottom end wall thickness being in the range of 0.009" to 0.016".

4,271,992

TAP FOR DISPENSING BEVERAGES

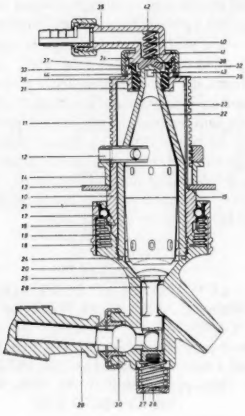
Carl M. Becker, Kalkstrasse 1b, 4030 Ratingen 4, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,208

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851182

Int. Cl.[3] **B67D** *3/00*

U.S. Cl. 222—509 **25 Claims**



1. A tap for dispensing beverages, particularly for dispensing non-alcoholic carbonated beverages delivered to the tap under pressure, said tap being of the type comprising a housing having a dispensing valve head secured to an outlet end of the housing, said tap further comprising a compensating sleeve surrounding a compensator and disposed inside said housing, said compensating sleeve being arranged for receiving a flow of the beverage at an inlet end of the housing, over a releasable connecting pipe secured to a union portion of the housing, said compensating sleeve being arranged such that it is removable from said housing together with the compensator after release of the dispensing valve head at the outlet end of the housing, said tap being provided with a shut-off valve at the union portion of said housing, said shut-off valve being arranged to be opened by inserting said compensating sleeve into said housing, said shut-off valve having a closure member operatively associated with a spring urging the closure portion of the valve against a valve seat upon withdrawal of the compensating sleeve from the housing, wherein the valve seat is formed as a part of gasket means disposed at said union portion of the housing, the gasket means being disposed such that an upstream end portion of the compensating sleeve passes through the gasket means when the dispensing valve head is secured to the housing, said gasket means being operative to simultaneously provide a generally leak proof seal between the compensating sleeve and the housing.

4,271,993

SLAG TAP FOR COAL SLAGGING GASIFIER

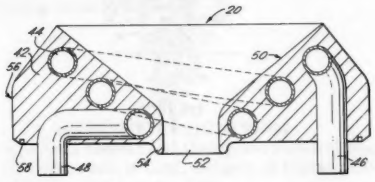
John A. Anderson, Knowle, England, assignor to British Gas Corporation, London, England

Continuation of Ser. No. 830,497, Sep. 6, 1977, abandoned, which is a division of Ser. No. 744,026, Nov. 22, 1976, abandoned. This application Jan. 2, 1979, Ser. No. 8

Claims priority, application United Kingdom, Nov. 27, 1975, 48806/75

Int. Cl.[3] **B22D** *41/08;* **B01J** *3/00*

U.S. Cl. 222—591 **6 Claims**



1. A slag tap for use in a coal slagging gasifier comprising:

a body comprised of a solid cast mass of high thermal conductivity metal;

said body having a central, right-circular cylindrical orifice through the bottom thereof, said orifice being oriented substantially vertically when said tap is in its normal operating position in a coal slagging gasifier,

a downwardly and inwardly sloping tundish surface extending from the top of said body and converging on and merging smoothly with the surface forming said orifice such that said tundish surface is upwardly positioned substantially horizontally above said orifice and forms a funnel when said slag tap is in its normal operating position in a coal slagging gasifier, and

the slope and length of said tundish surface and the diameter and length of said orifice being selected such that the overall width of said body is at least twice the overall height thereof and the height of said orifice is less than half the overall height of said body so that slag that is to be discharged from the gasifier can readily flow across said tundish surface and be removed through said orifice; and

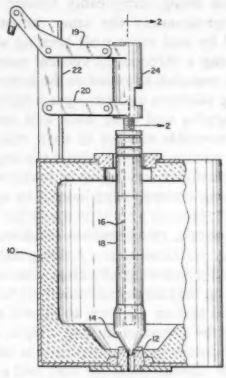
an integrally formed, spirally coiled metal tube for circulating a coolant liquid through said cast body, said coolant tube being capable of retaining its shape without any appreciable distortion during the casting of the surrounding metal mass and said coolant tube extending through said cast mass and forming a spiral coolant conduit adjacent to the top of said body and closely spaced from said tundish surface along the length thereof and closely spaced from and coiled around said orifice surface, said spacing from said surfaces being a distance of from 0.25 to 1.5 inches, the ends of said tube projecting exteriorly of the bottom of the surrounding cast metal body to provide a coolant inlet and outlet, the spiral of said tube approximating the surface of said tundish surface and said orifice surface.

4,271,994

FLEX ROD ASSEMBLY FOR A STOPPER VALVE IN A BOTTOM POUR LADLE

William W. Seaton, Dexter, Mich., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 9, 1979, Ser. No. 92,802
Int. Cl.³ B22D *41/10*
U.S. Cl. 222—602 **1 Claim**



1. Apparatus for aligning the stopper valve with its seat in a bottom pour ladle, including a bottom pour ladle, a valve seat surrounding a discharge opening in the bottom of the ladle, a stopper valve for controlling opening and closing of the opening, a first stopper rod connected at its lower end to the stopper valve, a parallelogram actuator for the stopper valve, a movable housing forming one side of the parallelogram actuator, a plate secured in the bottom portion of the housing, said plate having an opening therein, the first stopper rod extending up through the opening in such a manner that horizontal movement of the first rod is prevented at this location, a second rod pivotally secured to the top portion of the housing, a universal joint connecting the bottom of the second rod to the top of the first stopper rod, and releasable locking means associated with the second rod, which in a first position permits pivoting of the second rod with respect to the housing, and in a second position locks the second rod to the housing, preventing pivoting therebetween.

4,271,995

METHOD AND APPARATUS FOR MAKING FISHING LURE WINGS

Robert E. Shoup, Lot #11, Muleshoe Cts, R.D. #5, Duncansville, Pa. 16635

Filed Jul. 9, 1979, Ser. No. 55,555
Int. Cl.³ A41H *43/00*
U.S. Cl. 223—47 **21 Claims**

1. Apparatus for forming the wings of a fishing lure comprising,

a pair of cooperating arm members positioned in overlying spaced relationship,

said arm members each having a first end portion and a second end portion,

said first end portions being connected for pivotal movement of said arm members to move said second end portions toward and away from each other,

said second end portions being adapted to receive a wing forming material therebetween,

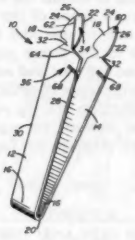
said arm members being movable between an open position where said second end portions are spaced apart and a closed position where said arm members are abutting,

said second end portions each having a substantially identical configuration corresponding to a preselected wing configuration,

alignment means provided on at least one of said arm member second end portions for selectively positioning the wing forming material between said second end portions in said closed position,

said alignment means including a plurality of reference points located on at least one of said second end portions,

said reference points being selectively positioned in spaced relation on said respective second end portion,



a pair of said reference points defining at least one reference line extending between said reference points,

said reference line forming a position indicator for the wing forming material between said second end portions, and

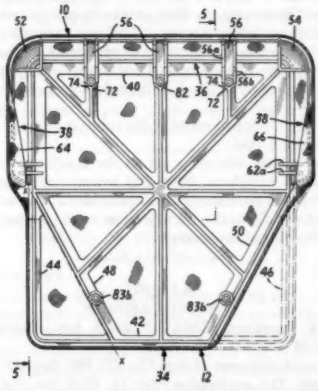
said position indicator arranged to receive a preselected portion of the wing forming material in register with said position indicator to selectively orient the wing forming material between said second end portions in a preselected position corresponding to a preselected configuration for forming the wing.

4,271,996

PANNIER FOR BICYCLE REAR CARRIER RACKS

Joseph S. Montgomery, Stamford, Conn., assignor to Cannondale Corporation, Stamford, Conn.

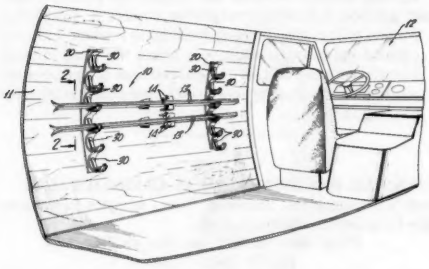
Filed Mar. 30, 1979, Ser. No. 25,394
Int. Cl.³ B62J *9/00*
U.S. Cl. 224—32 A **5 Claims**



1. A pannier for a rear carrier rack of a bicycle or the like comprising a bag of generally flexible lightweight material having a top wall, a back wall, a front wall, a bottom wall and a pair of side walls, an essentially rigid, unitary interior frame received within the bag which includes a back part having a peripheral portion matching and engaging the perimeter of the rear wall of the bag to impart shape and stability thereto, and

a top part substantially rigidly connected to the upper edge of the rear part, extending out at substantially a right angle to a plane defined by the peripheral portion of the rear part and having a peripheral portion substantially matching and engaging the perimeter of the top wall of the bag to impart shape and stability thereto, and two side parts substantially rigidly connected to the two side edges of the rear part, extending out at substantially a right angle to planes defined by both the peripheral portions of the rear and top parts and extending only partly down the side walls from the top to impart shape and stability to the upper side walls and permit the bottom portions of the front and side walls to assume the shape of the contents of the pannier, the interior space of the pannier thus being entirely uninterrupted side to side and top to bottom, and attaching means joined to the frame adjacent the juncture between the rear part and top part and adapted to mount the pannier on the rack with the top wall of the bag lying generally contiguous to the rack platform, the top part of the frame thus constituting a structural element for supporting part of an object carried on the rack platform and for supporting the bag and objects within it.

4,271,997
RACK FOR SKIS AND THE LIKE
Patrick T. Michael, 2027 W. Arbor Way, Orange, Calif. 92668
Filed Oct. 12, 1979, Ser. No. 84,091
Int. Cl.[3] B60R *11/00*
U.S. Cl. 224—42.45 R **14 Claims**



1. In a rack for skis and the like of the type including a pair of horizontally-spaced, parallel, vertically-positioned, elongate brackets connectable to a support wall and a plurality of cradle members removably connectable to said brackets for supporting skis and the like at spaced locations along the lengths thereof, the improvement wherein each of said cradle members comprises:

a generally C-shaped member for receiving said skis and the like therein; and

platform means extending across the inside surface of said C-shaped members, from the lower open end thereof toward said back thereof and positioned at an acute angle of at least 20° to the horizontal so as to support a ski and the like at said acute angle.

4,271,998
INFANT CARRIER
Harriet M. Ruggiano, 5338A NE. Sixth Ave., Oakland Park, Fla. 33308
Continuation-in-part of Ser. No. 727,180, Sep. 27, 1976, abandoned. This application May 11, 1979, Ser. No. 38,222
Int. Cl.[3] A47D *13/02*
U.S. Cl. 224—160 **2 Claims**

1. An infant carrier comprising:

an infant seating platform including a lightweight, fairly rigid, cushioned-enveloped block, sized in length and width to seat an infant, said block, including the cushioned envelope, having a substantial vertical thickness, about three inches or more, for engaging the mid-forward torso of a carrier person, said block having a top and a bottom horizontal surface, and front, back and side vertical surfaces;

an inner resilient wall and an outer resilient wall made of a resilient sheet material, said inner wall and said outer wall forming a double wall housing structure for housing said block, said inner wall forming the resilient surface of the rear and two sides of said seating platform, said cushioned-envelope block being removeably housed in a resilient pocket of approximately the same dimensions as said block formed by said inner wall housing structure, said outer wall being a three sided vertical extension of said resilient sheet material, adjoined to the bottommost edges of said seating platform and having a height of about ten inches, overlapping said inner wall, said inner and outer walls being moveable relative to each other, said outer wall having a portion disposed above the upper surface of said seating platform serving as a resilient three sided infant restraining compartment having an upper expandable rim;

a pair of carrier person, two shoulder, trunk engaging straps for suspending, positioning, and holding the seating platform strategically and integrally close and steady within a narrow range on the carrier-person's front torso, but loose enough for said seating platform to have a hinging property for easing the impact of shifting weight, a rectangular portion of said carrier person strap sized in length less than the side to side dimension of the seat, said carrier person strap portion connected horizontally to the outside of said compartment back outer wall in a lateral direction, the top edge of said rectangular strap portion being attached

about midway from said back outerwall, uppermost rim and the bottom most of said platform, said carrier person straps held tightly around the carrier person's rib cage by a pair of releasably joined loops, one of each said loops moveably mounted on one of each of the two sections of said carrier person's strap for adjusting the carrier person strap tension on the back torso of the carrier person, the diametrically opposed straps extending symetrically through said loops, over both carrier persons shoulders, along the underside of, and on the sides of, said seating platform, along the forward edges, and connected along part of the forward edges of the outer wall to within about midway of said outer walls uppermost rim and the bottom most edges of said platform, a pair of adjustment fasteners connected to said strap, said carrier person's straps being adjustable relative to each other in length for adjustment to the carrier person, and for adjustment of said seating platforms tilt;

an infant leg partition member connected to the forward wall of said seating platform and having a free looped end disposed above the upper surface of said seating platform, the other end of said partition member being disposed along the forward, bottom, and back walls of said seating platform and looped over said back outer wall;

means for releasably coupling the upper ends of said outer walls together through said partition loop;

a pair of removable infant side-headrests; and

a pair of narrow straps each connected to a different infant side-headrest, each of said narrow straps issuing through a loop which holds the adjustment fasteners of the carrier

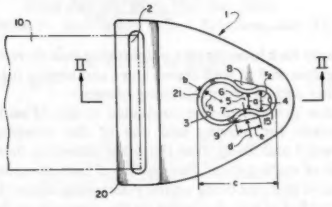
persons shoulder straps, each of said side-headrests being a small cushion, one of said narrow straps being long enough to reach from side to side behind the infant's head and beyond the opposing carrier person's shoulder strap so that the end of said longer narrow straps may be adjustably held with the end of the other of said pair of narrow straps by a slide fastener.

4,271,999

GUITAR STRAP CONNECTOR

David M. Stravitz, New York, N.Y., assignor to Ambico Inc., Lynbrook, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,533
Int. Cl.³ G10G *5/00*
U.S. Cl. 224—257 **12 Claims**



1. A one piece integrally formed guitar strap connector for engaging, retaining and loosely confining a pin-like button connector of a guitar, the pin-like button connector having a given diameter, comprising:

a body member (1) having connecting means (2) for connection of a guitar strap thereto;

a generally keyhole-shaped opening in said body member, said keyhole-shaped opening comprising first and second holes (3, 4) having a resilient restricting passageway 5 therebetween, said first hole (3) being larger than said second hole (4) and both of said holes being larger than said diameter of said pin-like button connector; and

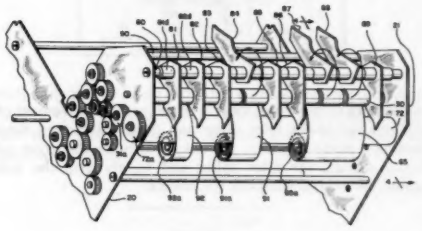
a pair of resilient spring-like members (6, 7) integral and unitary with said body member (1) and being located on respective opposite sides of said passageway (5) and defining said passageway (5), said spring-like members (6, 7) being bowed toward each other to form said resilient restricting passageway (5) therebetween, said passageway (5) having a width less than said diameter of said pin-like button connector, each spring-like member having a pair of smooth camming surfaces respectively facing both holes (3,4) and a respective void space (8,9) therebehind to permit said spring-like members to resiliently flex away from each other into said void spaces to permit a button connector of a guitar to be smoothly passed from the larger hole (3) resiliently through said restricting passageway (5) and into said smaller hole (4) wherein said button connector is engaged and retained without being wedged or otherwise restrained by said spring-like members (6,7), said button connector being loosely confined in said smaller hole (4) to permit substantially free rotating-type movement of the guitar strap connector about said pin-like button connector.

4,272,000

FILM GUIDANCE APPARATUS

Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2321 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation of Ser. No. 810,510, Jun. 27, 1977, Pat. No. 4,151,942. This application Jan. 15, 1979, Ser. No. 3,666
The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.
Int. Cl.³ B65H *23/32*
U.S. Cl. 226—1 **17 Claims**



1. Apparatus for introducing film strips of various widths into a film processing machine in which these film strips are transported through a succession of treatment tanks, the apparatus comprising:

pair of film transport rollers, positioned between a pair of mounting plates, the pair of rollers defining a nip and being positioned ahead of the inlet to the treatment tanks so as to direct the film strips through the nip into the inlet, and

plurality of spaced apart separating members positioned between the pair of mounting plates at predetermined intervals across the width of the pair of transport rollers,

the separating members defining pairs of adjacent insertion channels, located on opposite sides of the separating members and ahead of the nip, which are of sufficient width to accept a strip of film therein, the size of each of the film insertion channels being defined by one of the separating members and either another separating member or a mounting plate, and

the separating members being individually movable between a first position in which they are in front of the nip, to form the pairs of adjacent film insertion channels, and a second position in which they are not in front of the nip, to form channels capable of accepting strips of film having widths at least as great as the sum of the widths of the pairs of adjacent film insertion channels.

4,272,001

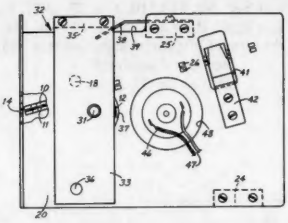
TICKET DISPENSER

Stephen Horniak, 424 Cedar Hill Rd., Ambler, Pa. 19002

Filed Oct. 15, 1979, Ser. No. 84,865
Int. Cl.³ B65H *17/10*
U.S. Cl. 226—187 **10 Claims**

1. A ticket dispensing apparatus comprising an idler roller, a fixed framework in which the idler roller is rotatably mounted, a drive roller disposed to press tickets against the idler roller, controllable power means connected to the drive roller to rotate it and therby advance tickets between it and the idler roller, a frame movable relative to the framework and in which the drive roller is rotatably mounted and which also disposes the drive roller on the side of the idler roller from which the tickets are supplied to the rollers, bias means which constantly bear on the movable frame to urge the drive roller toward the idler roller to constantly bear on the ticket between the rollers, support means between the movable frame and the framework directing the movement of the movable frame so the axis of the driven roller moves in a path which is inclined toward and

intersects the path of movement of the tickets on the delivery side away from the rollers, the drive roller being located so that it cannot move past the idler roller in the direction of the ticket movement because it abuts against the idler roller, said



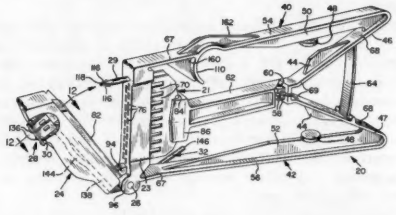
positioning of the drive roller and the path of movement of its axis relative to the idler roller and ticket movement thereby causing a manual pull on the tickets to bring the drive roller firmly toward the idler roller and tightly grip the tickets against movement between the rollers.

4,272,002

INTERNAL SURGICAL STAPLER

Jerome F. Moshofsky, Portland, Oreg., assignor to Lawrence M. Smith; G. Marts Acker and Franklin G. Smith, part interest to each

Filed Jul. 23, 1979, Ser. No. 59,667
Int. Cl.[3] B25C *1/00*
U.S. Cl. 227—19 **18 Claims**



1. In a suture stapler, holding means for holding a staple;
ram means for pushing the staple out of the holding means; and
a drive mechanism including a handle pivotally connected to the holding means and a thrust lever folded back on the handle and pivotally connected to the handle and the ram means so that, when the handle and the thrust lever are squeezed together, the ram means is moved through the holding means,
the handle and the thrust lever being integral and including a spring hinge portion connecting them together.

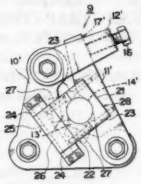
4,272,003

BUTT WELDING AND BURR SHEARING MACHINE FOR REINFORCE STEEL

Hirotsugu Oishibashi; Katsuyoshi Ueyama, both of Musashino; Muneyuki Ohara, Mitaka; Mitsuo Nakamura, Higashikurume, and Takayoshi Amano, Fussa, all of Japan, assignors to Japanese National Railways and Hakusan Seisakusho Co., Ltd., both of Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,272
Claims priority, application Japan, Jul. 3, 1978, 53-80763
Int. Cl.[3] B23K *37/02*
U.S. Cl. 228—13 **2 Claims**

1. A butt welding and burr shearing machine for metal rods, comprising:
a plurality of parallel stays;
a left clamping device and a right clamping device supported by said stays in spaced relation, at least one of said clamping devices being slidable along said stays, each of said clamping devices having a positioning clamp nonrotatably supported on said stays, a clamp lever pivotally supported at one end of said positioning clamp and pivotable between an open position in which a rod can be loaded into said clamping device and a clamping position in which a rod is clamped between said clamp lever and said positioning clamp, and a clamp lock lever pivotably supported at the other end of said positioning clamp, and pivotable between a position in which the free end of said clamping lever is movable toward the other end of said positioning clamp and a closed position in which said clamp lock lever holds the free end of said clamp lever close to the other end of said positioning clamp, said



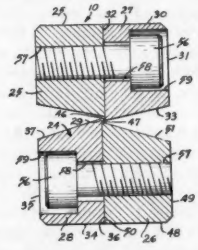
clamp lock lever having a tightening bolt therein engaging the free end of said clamp lever and urging it toward the other end of said positioning clamp;
a piston cylinder device connected to one of said clamping devices for moving said one of the clamping devices toward and away from the other clamping device; and
a pair of mating shear dies on one of said clamping devices, one of said dies being on the positioning clamp thereof and the other of said dies being on the clamp lever thereof, one of said dies being movably mounted for movement between an inoperative position in which it is spaced from a rod clamped in the clamping device, and an operating position in which it engages the other die to hold a rod in shearing engagement therebetween and spaces the positioning clamp and clamping lever of the one clamping device sufficiently far apart so that they cannot clamp a rod therebetween.

4,272,004

Z-BAR GUIDE APPARATUS

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Filed Oct. 23, 1979, Ser. No. 88,197
Int. Cl.[3] B23K *37/04*
U.S. Cl. 228—17.5 **12 Claims**



1. A Z-bar apparatus for guiding the edges of sheet material into overlapping relationship with each other as the material is being moved to a welding apparatus, comprising an elongated central guide member and elongated upper and lower guide bar means, said central guide member having upper and lower

vertically offset portions connected by a web having upper and lower surface, means for removably mounting said upper and lower guide bar means on said upper and lower portions of said central guide member, a first channel formed by portions of said lower portion of said central guide member and said web and said upper guide bar means, a second channel formed by portions of said upper portion of said central guide member and said web and said lower guide bar means, said first and second channels being in vertically spaced overlapping relationship with one another along the entire length of said central member and being of a size to slidably receive and guide the edges of the sheet material, each of said channels having substantially sharp corners along the base portion, at least one of said channels tapering relative to the other along its length so that said channels progressively converge vertically relative to one another along the length of said central guide members, whereby the edges of the sheet material are brought into substantially intimate engagement with one another as the sheet material is discharged from the apparatus.

4,272,005

EXPLOSIVE CLADDING

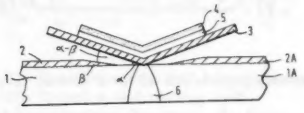
Peter W. Jackson, Whitley Bay, England; David K. C. Anderson, Troon, and David B. Cleland, Stevenston, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 15, 1979, Ser. No. 3,515

Claims priority, application United Kingdom, Jan. 17, 1978, 1850/78

Int. Cl.[3] **B23K** *20/08*

U.S. Cl. 228—107 **13 Claims**



1. A method of applying a surface layer across a gap between cladding layer edges on a clad metal plate comprising forming a shallow chamfer along each opposing cladding layer edge, forming a groove in the metal plate centrally between the chamfer edges of the cladding layers and positioning in the groove and over the said chamfers a corrosion resistant metal flyer-plate having a shallow generally V-shaped configuration with the apex of the flyer plate facing the clad metal plate and lying between and generally parallel to the cladding layer edges, superimposing an explosive layer upon the cladding layer and detonating the explosive layer so as to weld the flyer-plate material at least to the cladding layers on each side of the gap.

4,272,006

METHOD OF SOLDERING TUBE TO PLATE

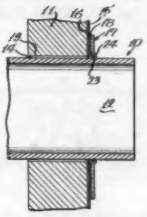
Stephen S. T. Kao, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Feb. 1, 1980, Ser. No. 117,395

Int. Cl.[3] **F28F** *9/16*

U.S. Cl. 228—183 **1 Claim**

1. The method of joining a heat exchanger tube to a header plate, comprising: providing a header plate having a tube receiving opening in said plate closely embracing said tube when inserted in said opening; arranging a said heat exchanger tube in said opening; providing a sheet of solder on at least one of said tube and plate adjacent to said opening; attaching a retainer wettable by molten said solder to said tube or plate and bearing against said solder to retain it in position, said solder having a melting point less than the melting point of the header, tube and retainer; heating the resulting assembly of tube, plate, retainer and solder to a melting temperature for said solder whereby said molten solder flows over said retainer and into the space between the plate and tube by capillary attraction; and cooling the solder to a temperature less than the melting point of the solder to form a joint uniting said tube and



header, said retainer being provided with an opening surrounding said tube, the opening being defined by a sharp edge engaging and slightly penetrating the surface of the tube for holding the retainer in position.

4,272,007

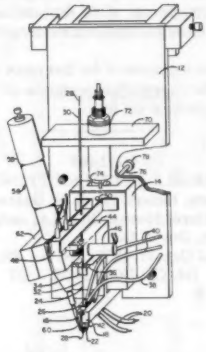
WIRE BONDING SYSTEM AND METHOD

James J. Steranko, 33 Rockport Rd., Weston, Mass. 02193

Filed Feb. 2, 1979, Ser. No. 8,876

Int. Cl.[3] **H05K** *13/06;* **B23K** *1/12*

U.S. Cl. 228—213 **11 Claims**



1. A method of bonding wire to a contact comprising: employing a first drive means to move a solder head to engage a wire in its tip with a contact to which it is to be bonded; heating said tip to heat the wire and contact and cause solder to flow; employing second drive means to apply an added force to increase the pressure of the tip on the wire and contact; removing the added force on and heating of the tip; and moving the solder head to remove the tip from the contact.

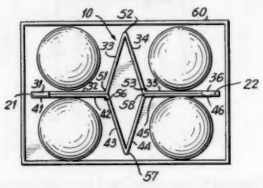
2. A bonding system comprising: a solder head; drive means for moving said head toward and away from a point to be soldered; a tip unit for receiving wire to be soldered and including a tip assembly having a first passage therethrough and a tip ministering assembly with a second passage for receiving wire and inserting it in said first passage; and holding means, for mounting proximate said tip assembly, said tip ministering assembly in a retracted position after threading with the wire passing through it to said tip assembly while allowing said tip ministering assembly to be readily released from said mounting means and moved into said first passage of said tip.

4,272,008

STAR DIVIDER

Roger M. Wozniacki, Spring, Tex., assignor to International Paper Company, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,693
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 **1 Claim**



1. A unitary blank for an adjustable carton divider consisting of:

a first panel, comprising a first end segment, four intermediate segments, and a second end segment, the segments being foldably connected in series by five transverse score lines; and,

a second panel, comprising a first end segment, four intermediatesegments, and a second end segment, the segments being foldably connected in series by five transverse score lines; wherein

all of the intermediate segments of the first and second panels are substantially equal in size;

the first end segments of the first and second panels are foldably connected along a first longitudinal score line;

the second end segments of the first and second panels are foldably connected along a second longitudinal score line; and,

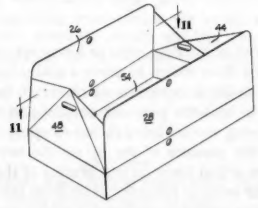
the intermediate segments of the first panel are in an abutting relation to the intermediate segments of the second panel along a longitudinal slit line.

4,272,009

ONE-PIECE DOUBLE DEPTH SHIPPING CONTAINER

Robert A. Bamburg, Hebert; Farris N. Duncan, West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Manville Forest Products, Dover, Del.

Filed Oct. 31, 1979, Ser. No. 89,849
Int. Cl.³ B65D *5/08, 5/00*
U.S. Cl. 229—41 R **9 Claims**



1. A one-piece double depth shipping container body production blank, comprising:

(a) a pair of side panels;

(b) an outer bottom panel hingedly attached to one of the side panels by a first score-line;

(c) a pair of inner end panels hingedly attached to the outer bottom panel by a second and third score-line;

(d) a pair of outer end panels hingedly attached to one of the side panels by a fourth and fifth score-line;

(1) one of the outer end panels also being hingedly attached to the other side panel by a sixth score-line;

(e) an inner bottom panel hingedly attached to the other side panel by a seventh score-line;

(f) the pair of side panels and the pair of outer end panels having formed therein an elongated eighth score-line spaced a pre-determined distance from the first and seventh score-line, the elongated eighth score-line running along the two side panels and the two outer end panels;

(g) one of the outer end panels also having formed thereon a hinged tab forming a manufacturers joint for the blank whenever the blank is set up into a container, the hinge being formed from a ninth score-line formed perpendicular to the eighth score-line; and

(h) each of the outer end panels also having formed therein a generally V-shaped score-line formed by a tenth and eleventh score-line and initiating at the apex of the V at a point approximately midway in the panel and located at an outer edge thereof and terminating at the elongated eighth score-line.

4,272,010

FOOD SERVICE CONTAINER AND LID

James L. Capo, Middletown, Ohio, assignor to International Paper Company, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,319
Int. Cl.³ B65D *43/06, 05/64*
U.S. Cl. 229—43 **21 Claims**

1. A unitary paperboard lid for a rimmed receptacle comprising:

a cover panel whose outer dimensions are at least equal to the outer dimensions of the top of the receptacle; and

a pair of locking assemblies depending from opposite edges of the cover panel, each locking assembly comprising

an outer wall panel foldably connected to the cover panel,

means in each outer wall panel defining a semi-detachable retaining tongue,

an inner wall panel containing slot means for engaging the rim of the receptacle,

means for connecting the inner wall panel to the outer wall panel, and

means for securing the upper edge of the inner wall panel in spaced relation to the outer wall panel, whereby the slot means is held in spaced relation to the outer wall panel;

the lid being lockable to the receptacle by engaging the rim of the receptacle in the two slot means and detaching the two retaining tongues from the two outer wall panels to engage the portions of the rim protruding through the slot means, whereby each retaining tongue exerts an outward and upward bias on the protruding rim of the receptacle.

4,272,011

CENTRIFUGAL COUNTERFLOW TYPE CONTACTOR

Katsuaki Nagatomo; Shigenobu Hisatomi; Kiyoshi Fujiwara; Hiromasa Fukumori; Shoji Yoshinaga, all of Kudamatsu, and Kyozo Yoshioka, Hikari, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,657
Claims priority, application Japan, Aug. 10, 1977, 52-95076
Int. Cl.³ B04B *5/06*
U.S. Cl. 233—15 **16 Claims**

1. A centrifugal counterflow type contactor comprising

(a) a rotating shaft,

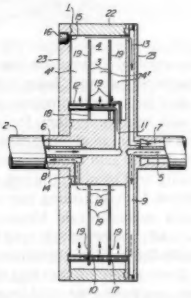
(b) a drum carried by said rotating shaft for rotation in

unison therewith, said drum defining an interior annular space with an axial width, said drum adapted to have a light liquid and a heavy liquid flow therethrough in a radial direction, whereby the radial flow velocity may vary in the axial direction of said drums, the axial width being smaller than a preselected axial width so that the variation in radial flow velocity is suppressed,

(c) a light-liquid-in line means and a heavy-liquid-in line means both formed in said rotating shaft,

(d) a light liquid introducing means for introducing through said light-liquid-in line means a light liquid into said annular space in said drum at positions adjacent to the radially outward end or the outer periphery of said annular space,

(e) a heavy liquid introducing means for introducing through said heavy-liquid-in line means a heavy liquid into said annular space in said drum at positions adjacent to the radially inward end or the inner periphery of said annular space,



(f) a light-liquid-out line means and a heavy-liquid-out line means both formed in said rotating shaft,

(g) a light-liquid-lead-out line means for leading out said light liquid through said light-liquid-out line means from said annular space in said drum at positions in the vicinity of said radially inward end or the inner periphery of said annular space, and

(h) a heavy-liquid-lead-out line means for leading out said heavy liquid through said heavy-liquid-out line means from said annular space in said drum at positions in the vicinity of said radially-outward end or the outer periphery of said annular space, whereby the radial counterflow contact may be caused between said light liquid introduced into said annular space adjacent to said radially outward end thereof and said heavy liquid introduced into said annular space adjacent to said radially inward end thereof.

4,272,012

METHOD AND SYSTEM FOR CONTROLLING A PLURALITY OF TEMPERATURE CONDITIONING UNITS

John R. Molnar, 426 James St.; Earl H. Mechling, Butler Rd., and William L. Bell, 525 Oakwood Ave., all of Springdale, Pa. 15144

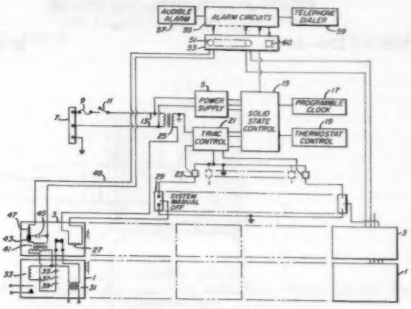
Filed Mar. 9, 1979, Ser. No. 18,923
Int. Cl.[3] H02J *1/00*; G05D *23/12*
U.S. Cl. 236—1 E **10 Claims**

1. A system for controlling a multi-unit temperature conditioning installation comprising:

means for repetitively generating timing intervals;

a plurality of control means each of which is connected to enable a group of said temperature conditioning units when energized; and

sequencer means for sequentially and repetitively, one after the other, at intervals equal to one of said timing intervals, energizing a control means for a first preset number of said timing intervals and then deenergizing it for a second preset number of said timing intervals with the total of said first and second preset number of intervals equal to the total number of control units such that a total of said



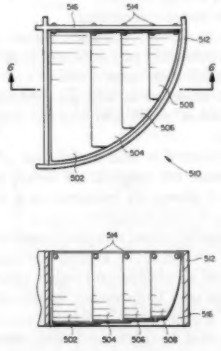
first preset number of control units are energized and the second preset number are deenergized during each timing interval, whereby groups of said conditioning units are disabled for a preset period of time on a rotating basis.

4,272,013

VENT CONTROL ARRANGEMENT FOR COMBUSTION APPARATUS

Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,877
Int. Cl.[3] G05D *23/08*
U.S. Cl. 236—1 G **5 Claims**

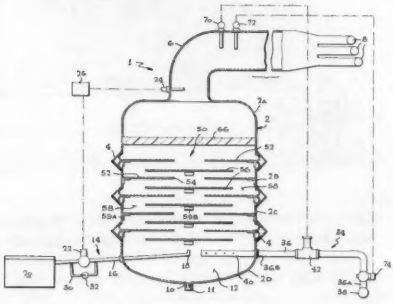


1. A damper arrangement for controlling vent gases along a path from a gas-fired appliance comprising bimetal element means disposed in the path, said bimetal element means including a plurality of bimetal strips responding to temperatures of the vent gases and flexing across the path for opening and closing the flow of gases, elongate opening means formed between adjacent portions of the bimetal element means with the opening means extending lengthwise of the adjacent portions for permitting the same to flex into a changed shape, and means for covering the opening means when the bimetal element means is at or near a position closing the flow of gases, the covering means including means for mounting the bimetal strips with side margins thereof extending in overlapping relationship when closing the flow of gases, with the covering means presenting a minimum of resistance to flexing of the bimetal element means.

4,272,014
HUMIDIFICATION SYSTEM

Paul F. Halfpenny, Van Nuys; Camillo L. Passarelli, Studio City, and Philip S. Starrett, Glendale, all of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Dec. 26, 1978, Ser. No. 973,745
Int. Cl.[3] F24F 3/14
U.S. Cl. 236—44 B 20 Claims



16. A system for controlling the humidity within the passenger compartment of an aircraft, the aircraft having a source of high temperature, pressurized air and a source of pressurized water, comprising:

a tank having an outlet duct connected to said passenger compartment of said aircraft;

water injection means comprising:

a water injection nozzle mounted within said tank;

pipe means connecting said source of pressurized water to said water injection nozzle; and

valve means mounted in said pipe means between said water injection nozzle and said the source of pressurized water;

a thermistor mounted in said outlet duct of said tank and adapted to sense the temperature within said outlet duct and to have a change in resistance as a function of said temperature;

relay means coupled to said thermistor and said valve means and adapted to sense the change in resistance of said thermistor and to actuate said valve means to the open position upon said temperature within said outlet duct rising above a preselected value and to close said valve means upon said temperature falling below said preselected value;

airflow control means comprising:

an air injection nozzle mounted within said tank;

pipe means connecting said source of high temperature air to said air injection nozzle;

a temperature-biased pressure regulator for controlling airflow into said tank such that said airflow has an internal energy sufficient to vaporize said water injected into said tank;

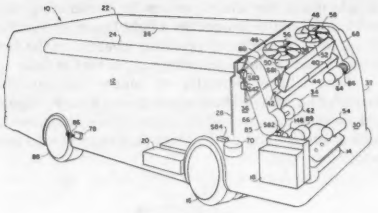
evaporator means mounted within said tank between said outlet duct and said air injection and said water injection nozzles, said evaporator means adapted to maintain said water within said tank until said water has been vaporized; and

a demisting filter mounted in said tank between said evaporator means and said outlet duct, said filter adapted to prevent particulate matter from leaving said tank.

4,272,015
COACH CLIMATE CONDITIONING BLOWER CONTROL

Raymond E. Houser, Wooster, Ohio, assignor to Grumman Flexible Corporation, Delaware, Ohio

Filed May 31, 1979, Ser. No. 44,005
Int. Cl.[3] F24F 7/00; B60H 3/00
U.S. Cl. 236—49 2 Claims



1. In a climate control system for the passenger compartment of a motor vehicle having at least one blower for circulating air through said passenger compartment, an air conditioning, reheating, and heating system for conditioning the air circulated by said blower, an electric motor operable at a low and a high speed driving said blower, and a source of electric power for operating said blower, the improvement in an electrical control circuit for controlling the speed of said blower comprising: switch means in said blower control circuit for selecting automatically the operating speed of said blower, said switch means including a first thermostat responsive to the temperature of the coolant of the engine of said vehicle, a second thermostat responsive to outside ambient temperature, a third thermostat responsive to the temperature of the return air from said passenger compartment, and a pressure switch operatively connected to the suspension system of said vehicle such that said pressure switch is responsive to weight imposed on said vehicle as a function of the number of passengers aboard the same, said thermostats having predetermined temperature set points, said pressure switch having a predetermined pressure set point, said switch means being operable to switch said control circuit to operate said blower at its low speed in a first condition where said first thermostat is above its said set point and said second and third thermostats and said pressure switch are below their said set points and in a second condition where said first and second thermostats are above their said set points and said third thermostat and said pressure switch are below their said set points, and said switch means being operable to switch said control circuit to operate said blower at its high speed in a third condition where said first and second thermostats and said pressure switch are above their said set points and said third thermostat is below its said set point and in a fourth condition where said first, second, and third thermostats are above their said set points and said pressure switch is below its said set point, whereby a correct volume of air for a specified passenger load conditioned to maintain a specified passenger compartment temperature is delivered by said blower.

4,272,016
INTEGRATED SEWAGE TREATMENT SYSTEM

Robert H. Nealy, 365-C11 Newtown Rd., Warminster, Pa. 18974

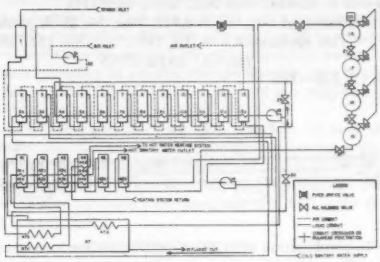
Continuation-in-part of Ser. No. 775,805, Mar. 9, 1977, Pat. No. 4,135,665, which is a continuation-in-part of Ser. No. 477,539, Jun. 7, 1974, abandoned. This application Jan. 22, 1979, Ser. No. 5,542
Int. Cl.[3] F23G 1/00; C02F 3/00; F24D 3/00
U.S. Cl. 237—56 4 Claims

1. An integrated sewage treatment system comprising:

(a) first means for collecting domestic sewage composed of raw human excrement and other organic and inorganic wastes entrained in transport water;

(b) second means for mineralizing the organic component of said sewage;

(c) third means for liquid-phase sterilization of the effluent remaining after the organic component of said sewage has been mineralized;



(d) fourth means for regeneratively utilizing the thermal energy contained in said effluent after sterilization to energize at least one other thermally motivated function normally associated with human domestic life; and

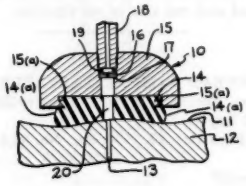
(e) fifth means for disposing of said effluent after its thermal energy has been utilized and depleted.

4,272,017

METHOD AND NOZZLE ASSEMBLY FOR FLUID JET PENETRATION OF A WORK MATERIAL

Norman C. Franz, Apt. 1203-4665 W. Tenth Ave., Vancouver, Britsh Columbia, Canada

Filed Mar. 22, 1976, Ser. No. 669,301
Int. Cl.³ B26F *1/26*
U.S. Cl. 239—1 **8 Claims**



1. A method of penetrating a work material with a high energy fluid jet ejected from a nozzle element comprising the steps of:

(a) addressing the nozzle element to the work material through a chamber interpositioned between a fluid ejection point of the nozzle element and a surface of the work material;

(b) forcing the chamber into a compressed engagement with said work material surface, to cause said chamber to be compressively and substantially sealed against said surface; and

(c) ejecting a high energy fluid jet through the nozzle element, and in throughgoing traverse of said chamber, at a fluid pressure upstream of the nozzle element which develops to at least about 700 kilograms per square centimeter until the work surface is penetrated to the desired extent; wherein

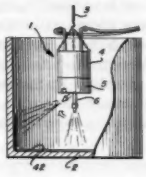
said through-chamber addressing step comprises disposing a deformable element having a tubular opening formed therein between the nozzle element and the surface of the work material.

4,272,018

APPARATUS AND METHOD FOR SPRAYING REFRACTORY MATERIAL

Richard W. Hickson, Lake Village, Ind., assignor to Southern Refractories, Inc., Chicago, Ill.

Filed Aug. 4, 1978, Ser. No. 930,985
Int. Cl.³ B05B *13/04*; C21B *7/06*
U.S. Cl. 239—8 **8 Claims**



1. An apparatus for spraying refractory materials on the interior surfaces of refractory bodies, comprising:

a. a fixed top element;

b. a rotating bottom element depending from and rotatably mounted vertically below said fixed element;

c. first means for axially rotating said bottom element about the vertical axis of the apparatus;

d. a downwardly-depending angularly adjustable spray nozzle mounted on the bottom face of said rotating element for spraying refractory material, said nozzle capable of spraying the bottom interior surface of the refractory body;

e. second means for conveying refractory material to said nozzle;

f. third means for conveying a wetting agent to said nozzle; and

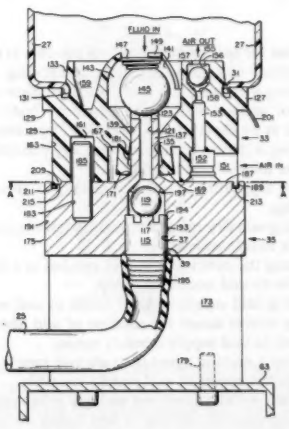
g. fourth means for adjusting the direction of spray of said nozzle.

4,272,019

FLUID SPRAYER APPARATUS AND METHOD

Samuel A. Halaby, Jr., 276 Thornell Rd., Pittsford, N.Y. 14534

Filed Oct. 17, 1978, Ser. No. 952,107
Int. Cl.³ B05B *7/30, 15/08*; B65D *41/32*; F16L *37/28*
U.S. Cl. 239—8 **53 Claims**



1. In a fluid sprayer apparatus including a selected fluid for spraying therewith, a container for said selected fluid, a fluid supply means associated with said container and said apparatus and comprising in combination a coded fluid inlet and dispens-

ing means having means for attachment to spraying means of said apparatus and having attachment means for attaching the inlet of said coded means to the outlet of a vented companion coded fluid outlet and dispensing means having means for attaching said companion coded means to a container of said fluid characterized in that said inlet and dispensing means and said companion coded fluid outlet and dispensing means each comprises a tubular body with an endwall having a multiplicity of elongated key chambers, said endwalls being opposed and said key chambers in each endwall having locations corresponding to those of key chambers in the opposing endwall with at least two of said chambers being selected mating key chambers and having key pins fitted therein to engage corresponding mating key chambers in the opposing endwall in accordance with a code associated with a selected fluid to be sprayed from said fluid sprayer apparatus and provided in said container.

4,272,020

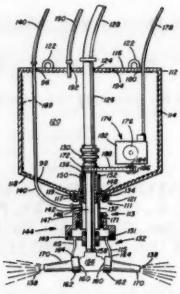
GUNNING APPARATUS FOR IN SITU SPRAYING OF REFRACTORY MATERIAL

Ralph E. Allison, Wheelersburg, Ohio, assignor to BMI Inc., Pittsburgh, Pa.

Continuation of Ser. No. 934,327, Aug. 16, 1978, Pat. No. 4,211,367, which is a continuation-in-part of Ser. No. 780,268, Mar. 23, 1977, abandoned. This application Nov. 26, 1979, Ser. No. 97,238

Int. Cl.[3] **B05B** *3/02;* **C21B** *7/06*

U.S. Cl. 239—8 **14 Claims**



1. Method for spraying a refractory product in situ upon the interior surface of a refractory body comprising,

positioning a housing at a preselected location opposite said interior surface within said refractory body being maintained at an elevated temperature of operation,

conveying a stream of air entrained dry refractory material into an inlet of said housing,

rotatably supporting a nozzle assembly in an outlet of said housing,

conveying said dry refractory material through said housing to said nozzle assembly,

positioning the outlet of a supply conduit in a fixed position relative to said nozzle assembly,

connecting said supply conduit outlet to said nozzle assembly by swivel means for rotation of said nozzle assembly relative to said supply conduit outlet,

conveying a wetting agent through said supply conduit and said swivel means to said nozzle assembly,

mixing said wetting agent and said dry refractory material in a mixing chamber portion of said nozzle assembly to form a refractory product,

rotating said nozzle assembly at a preselected speed and in a preselected rotary direction, and

applying said refractory product in a spray from said nozzle assembly onto a preselected area of said interior surface of said refractory body while said refractory body is at an elevated operating temperature.

4,272,021

PIPELINE DRAIN APPARATUS

Norman S. Standal, Star Rte., Bliss, Id. 83314

Continuation of Ser. No. 850,917, Nov. 14, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,708

Int. Cl.[3] **A01G** *25/09*

U.S. Cl. 239—106 **7 Claims**

1. In combination with an irrigation pipeline having cylindrical walls made of rigid material and having a plurality of longitudinally spaced sprinkler outlets open through said walls along one side of the pipeline;

an apparatus for draining liquid from within the irrigation pipeline, comprising:

elongated sealed bladder means located within the pipeline, said bladder means having a length that longitudinally overlaps the sprinkler outlets along said one side of the pipeline;

said bladder means being expandable and collapsible in transverse directions within the pipeline toward or away from the sprinkler outlets overlapped thereby along said one side of the pipeline;

said bladder means containing compressible gas at a pressure and volume adequate to cause the bladder means to expand toward the walls of the pipeline when the pipeline is empty of water, such gas pressure being less than a predetermined supply water pressure for the pipeline;

and means for introducing water under said predetermined supply water pressure to the space between said bladder means and said one side of the pipeline.

4,272,022

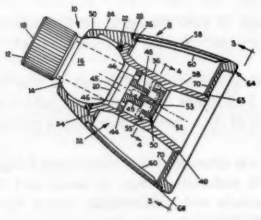
SHOWERHEAD WITH REPLACEABLE HOUSING

Frank C. Evans, Rockford, Mich., assignor to Zin-Plas Corporation, Grand Rapids, Mich.

Filed Oct. 17, 1979, Ser. No. 85,524

Int. Cl.[3] **B05B** *1/18*

U.S. Cl. 239—107 **15 Claims**



1. A showerhead comprising:

a ball joint having an inlet end adapted to be connected to a supply pipe, an outlet end including a ball and a passage connecting said inlet end with said outlet end to provide for fluid communication through said ball joint;

a skirt member mounted on said ball for swiveling movement thereon and coaxially disposed about said passage, said skirt member including a shoulder about a lower outer circumference;

a generally cylindrical water flow section extending from

said skirt member for directing fluid flowing through said passage;

an annular groove disposed on an outer circumferential surface of said cylindrical section;

orifice plate means disposed in said cylindrical section downstream of said ball for shaping fluid flowing through said cylindrical section into a water spray pattern; and

a generally cylindrical decorative shell coaxially disposed about and radially spaced from said cylindrical water flow section including an annular end portion having a bead on an inner circumference thereof received in a snap-fit locking relationship in said groove;

said shell removably abutting said shoulder of said skirt member and having an outer surface continuous with an outer surface of said skirt member;

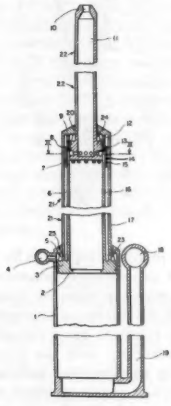
wherein said shell is removable from said cylindrical water flow section without disconnecting said ball joint from said supply pipe.

4,272,023

TELESCOPIC SINKING HYDRANT

Vesselin Y. Georgiev, and Vladimir S. Mednikarov, both of Sofia, Bulgaria, assignors to Institute po Mechanika i Biomechanika, Sofia, Bulgaria

Filed May 3, 1979, Ser. No. 35,541
Claims priority, application Bulgaria, Oct. 30, 1978, 41257
Int. Cl.[3] B05B *15/10*
U.S. Cl. 239—204 **4 Claims**



1. A retractable sprinkler for an irrigation system having main and ancillary conduit means alternately supplied with water under pressure; comprising:

a stationary cylinder communicating at its bottom with said main conduit means and at its top with said ancillary conduit means;

a first-stage riser tube having an open lower end with a first piston head guided in said cylinder for vertical reciprocation under water pressure from said main and ancillary conduit means between a retracted position near the cylinder bottom and an elevated position near the cylinder top, said first-stage tube having an inner and an outer peripheral wall defining an annular channel therebetween;

a second-stage riser tube having a closed lower end with a second piston head guided in said inner wall for vertical reciprocation under said water pressure between a retracted and an elevated position relative to said first-stage tube, said second-stage tube penetrating an otherwise closed upper end of said first-stage tube and having an axial bore terminating in an outlet at the top thereof;

first stop means in said cylinder defining a first clearance between the cylinder top and said first piston head in the elevated position of the latter, said first clearance being open to said ancillary conduit means and communicating with said annular channel through a set of first radial holes near the lower end of said outer wall;

second stop means in said first-stage tube defining a second clearance between said upper end thereof and said second piston head in the elevated relative position thereof, said inner wall being provided near said upper end with a set of second radial holes connecting said second clearance with said annular channel, said axial bore being connected at the bottom thereof via a set of third radial holes with an annular peripheral groove of said second piston head, said inner wall being further provided below said second radial holes with a set of vertical slots extending in the elevated relative position of said second-stage tube from the level of said peripheral groove to a level below the undersurface of said second piston head whereby a flow path for incoming water is formed in the elevated positions of said tubes from said main conduit means via said cylinder, the open lower end of said first-stage tube, said slots, said peripheral groove, said third radial holes and said bore to said outlet; and

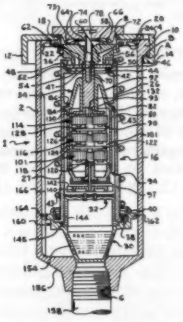
a sleeve in said channel closing said slots from without, said sleeve having vertical passages forming with said first and second radial holes a flow path extending to said ancillary conduit means for the retraction of said second-stage tube under water pressure from the latter conduit means and for the escape of water trapped in said second clearance upon an ascent of said second-stage tube under water pressure from said main conduit means.

4,272,024

SPRINKLER HEAD

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Filed Aug. 27, 1979, Ser. No. 69,965
Int. Cl.[3] B05B *3/04, 15/10*
U.S. Cl. 239—206 **11 Claims**

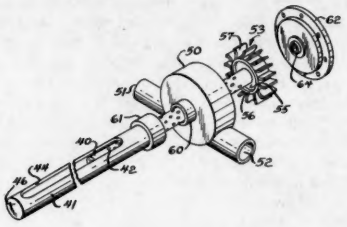


1. A sprinkler head having nozzle means for directing fluid therefrom, drive means for rotating said nozzle means in response to fluid passing through said sprinkler head, said nozzle means having a surface engaging a non-rotating part of said sprinkler head, means continuously biasing said surface of said nozzle means against said non-rotating part, said fluid passing through said nozzle means flowing in a direction to decrease the force of said biasing means acting to bias said surface of said nozzle means against said non-rotating part.

4,272,025
WATER DISTRIBUTION SYSTEM FOR AN ICE MAKING DEVICE

Ermanno Mazzotti, 501 Newberry Dr., Streamwood, Ill. 60103

Filed May 21, 1979, Ser. No. 40,851
Int. Cl.[3] B05B 3/16
U.S. Cl. 239—240 7 Claims



1. A spraying unit for spraying fluid in a predetermined angular arc from the spraying unit onto a surface in spaced relation from the spraying unit, said spraying unit comprising:

rotatable spraying means with a plurality of orifices extending into a hollow interior of the spraying means, the hollow interior of the spraying means adapted to communicate with a supply of fluid to be sprayed;

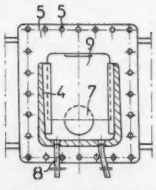
shielding means disposed about said rotatable spraying means with sufficient operational clearance between said spraying means and said shielding means to permit said spraying means to be rotated within said shielding means while said shielding means remains relatively stationary with respect thereto, said shielding means having at least one open area through which fluid may be sprayed through those orifices of the spraying means which are encompassed by the open area in said shielding means, said shielding means being adjustably disposed with respect to said spraying means for selectively regulating the direction of spraying; and

means for rotating said spraying means whereby fluid is directionally sprayed from said spraying means through the open area in said shielding means in a plurality of fine streams which continuously sway across the surface being sprayed.

4,272,026
SPRINKLING DEVICE FOR ABSORPTION TOWERS

Aleksander Jazlowski; Rudnicki Michal; Bartosz Tadeusz; Czelny Zdzislaw, all of Gliwice; Zurkowski Jozef, Gieraltowice, and Romanczyk Henryk, Katowice, all of Poland, assignors to Biuro Studiow, projetiwo Realizacji in Westycji Przemyslu Nieorganicznego "Biprokawas", Gliwice, Poland

Filed Oct. 24, 1978, Ser. No. 954,212
Int. Cl.[3] B05B 1/20, 1/30, 15/06
U.S. Cl. 239—273 4 Claims

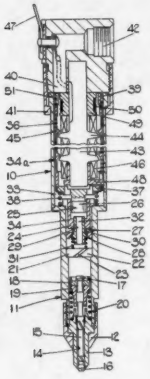


1. A sprinkling device for an absorption tower comprising a collector extending at a level above the tower for distribution of liquid into the tower, means for supplying liquid to said collector, a jacket having cavities in which said collector is supported, feeding troughs for receiving liquid from said collector for distribution into said tower, said collector including a side wall, flange connectors connecting the troughs to said side wall of the collector, said side wall of the collector having orifices for feeding liquid to said feeding troughs, valve plates at said orifices for controlling the outflow of liquid to said feeding troughs, and sprinkling tubes connected to said troughs for distributing the liquid in the troughs into the tower.

4,272,027
FUEL INJECTION PUMPING APPARATUS

Alec H. Seilly, North Wembley, and Dorian F. Mowbray, Burnham, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 16, 1979, Ser. No. 94,717
Claims priority, application United Kingdom, Mar. 3, 1979, 07556/79
Int. Cl.[3] B05B 1/30
U.S. Cl. 239—585 12 Claims



1. A fuel injection pumping apparatus for supplying fuel to a combustion space of an internal combustion engine and comprising an injection nozzle positioned in use on an engine so that fuel delivered to the nozzle will be injected into the combustion space and an injection pump for delivering fuel to the nozzle in timed relationship with the associated engine, the apparatus comprising an elongated hollow body of stepped form having the injection nozzle mounted at the narrower end of the body, a hollow cylindrical valve mounting having a peripheral flange engaging the step in the body and defining a bore in the body, a plunger forming part of said pump slidable in said bore to vary the size of a pumping chamber, resilient means biasing the plunger in a direction to increase the size of the pumping chamber, electromagnetic means mounted in the wider portion of the body and operable to move the plunger against the action of said resilient means to displace fuel from the pumping chamber through said nozzle, and a valve controlled fuel inlet to said pumping chamber and through which fuel can flow into said bore from a source of fuel when the plunger is moved by said resilient means, a valve member of said valve also acting to relieve the pressure in said bore by its engagement with the plunger, after the plunger has been moved to a predetermined position by the electromagnetic means, said bore being of stepped form, the end portion of the bore adjacent the electromagnetic means accommodating the plunger, the intermediate portion of the bore supporting the valve member and the other end portion of the bore defining at its end a seating for a head of the valve member, said other end portion of the bore being of larger diameter than the intermediate portion and having ports formed therein through which fuel can flow from said source, the valve member having a passage extending therethrough and through which fuel can

flow into the pumping chamber from said ports when the valve head is lifted from its seating.

4,272,028

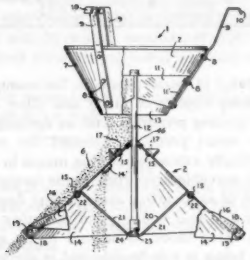
SPREADER FOR AND OPERATIVE BY A GRANULAR PRODUCT

Wayne E. Cobb, 358 Harrison St., Valparaiso, Ind. 46383

Continuation of Ser. No. 758,209, Jan. 10, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,126

Int. Cl.[3] **A01C** *17/00*

U.S. Cl. 239—687 **31 Claims**



1. In combination: a hopper for receiving a granular product, said hopper having a lower outlet, a shaft secured in said hopper and extending downwardly through and below said outlet, a generally conical impeller having an upper opening through which said shaft extends, a plurality of spaced spiral blades secured to the upper side of said impeller and a fitting carried by its under side, a housing connected to said shaft, an apertured member disposed in a lower part of said housing and a bearing disposed in said housing and upon said apertured member, and means connected to said fitting and said bearing and extending through said apertured member whereby said bearing engages said member for suspending said spreader thereon for rotation relative to said shaft when such a product flows against said blades.

4,272,029

UPGRADING OF BAUXITES, BAUXITIC CLAYS, AND ALUMINUM MINERAL BEARING CLAYS

David Weston, Toronto, Canada, assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 838,445, Oct. 4, 1977, Pat. No. 4,193,791, which is a continuation-in-part of Ser. No. 736,466, Oct. 28, 1976, Pat. No. 4,113,466, and Ser. No. 115,397, Jan. 24, 1979. This application Feb. 23, 1979, Ser. No. 14,279

Int. Cl.[3] **B02C** *23/08;* **B03B** *1/04*

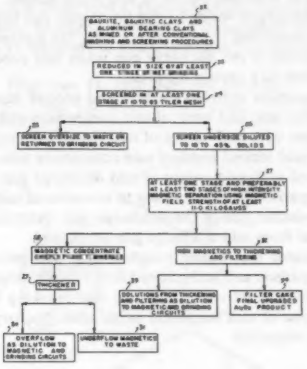
U.S. Cl. 241—16 **65 Claims**

1. A process for the upgrading of an aluminum mineral bearing material selected from the group consisting of bauxites and bauxitic clays comprising:

(a) subjecting said material to at least one stage of wet grinding at a pulp density of about 25% to 60% solids, and in the presence of at least sodium hydroxide, and in the pH range of about 8.5 to 12.5;

(b) subsequently subjecting the said pulp to at least one screening stage in the range of 10 mesh Tyler to 65 mesh Tyler to produce a minus 10 to minus 65 mesh product, wherein the screen size used in said screening stage is a direct function of the width of the magnetic gap of a high intensity magnetic separation apparatus used in a subsequent at least one stage of high intensity magnetic separation; and wherein such screen size is at least 10% less in dimension than the width of the said magnetic gap setting in the subsequent at least one stage of high intensity magnetic separation;

(c) subsequently subjecting the said minus 10 to minus 65 mesh product to at least one stage of high intensity magnetic separation using a field strength of about 11.0 to 22.0 kilogauss to produce a magnetic concentrate enriched in iron and titanium minerals and a nonmagnetic product impoverished in iron and titanium minerals; and


BAUXITE, BAUXITIC CLAYS AND ALUMINUM BEARING CLAYS AS MINED OR AFTER CONVENTIONAL WASHING AND SCREENING PROCEDURES
REDUCED IN SIZE BY AT LEAST ONE STAGE OF WET GRINDING
SCREENED IN AT LEAST ONE STAGE AT 10 TO 65 TYLER MESH
SCREEN OVERSIZE TO WASTE OR RETURNED TO GRINDING CIRCUIT
SCREEN UNDERSIZE DILUTED TO 10 TO 45% SOLIDS
AT LEAST ONE STAGE AND PREFERABLY AT LEAST TWO STAGES OF HIGH INTENSITY MAGNETIC SEPARATION USING MAGNETIC FIELD STRENGTH OF AT LEAST 11.0 KILOGAUSS
MAGNETIC CONCENTRATE ENRICHED IN IRON AND TITANIUM MINERALS
NON MAGNETICS TO THICKENING AND FILTERING
THICKENER
SOLUTION FROM THICKENING AND FILTERING AS SOLUTION TO MAGNETIC AND GRINDING CIRCUITS
FILTER CAKE FINAL UPGRADED Al2O3 PRODUCT
OVERFLOW AS DILUTION TO MAGNETIC AND GRINDING CIRCUITS
UNDERFLOW MAGNETICS TO WASTE

(d) subsequently subjecting said nonmagnetic product to at least one stage of desliming to produce a fines product enriched in iron, titanium, and silica, and a coarse product impoverished in iron, titanium and silica.

4,272,030

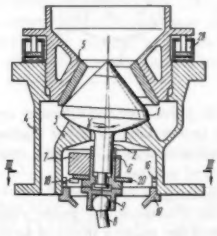
DEVICE FOR ADJUSTING AN INERTIA CONE CRUSHER DISCHARGE GAP

Mikhail M. Afanasiev, Varshavskaya ulitsa, 25, kv. 33; Nikolai A. Ivanov, Novoizmailovsky prospekt, 19, kv. 96; Evgeny A. Konstantinov, prospekt Kima, 28, kv. 220, and Valery A. Makarov, Pionerskaya ulitsa, 39, kv. 17, all of Leningrad, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,129

Int. Cl.[3] **B02C** *2/04*

U.S. Cl. 241—37 **1 Claim**



1. A device for adjusting a discharge gap in an inertia cone crusher comprising a breaking head having a shaft, an out-of-balance weight coupled mechanically with said shaft and rotatable around the vertical axis of said crusher, and a crushing bowl installed above said breaking head and capable of vertical displacement with respect to the latter so as to change the size of said discharge gap, said device including:

an angle sensor, responsive to a deflection of the axis of said breaking head from the vertical, having an output, said sensor being an induction sensor comprising a plurality of inductance coils interconnected electrically in parallel, said induction coils being mounted fixedly around said shaft of said breaking head and uniformly distributed along a circle having the center thereof on the vertical axis of said crusher, and at least one permanent magnet coupled mechanically with said out-of-balance weight for

inducing electrical signals in said inductance coils as said out-of-balance weight rotates;

a signal preprocessing unit having an input and an output, said input of said signal preprocessing unit being connected with said output of said angle sensor;

a discharge gap setter having an output, and being adapted for generating a signal determining the maximum permissible size of the discharge gap when said cone crusher is applied to a certain material;

a comparison unit having first and second inputs and an output, said first input of said comparison unit being connected with said output of said signal preprocessing unit, and said second input of said comparison unit being connected with said output of said discharge gap setter; said comparison unit responding to an excess of said maximum permissible size of the discharge gap, determinable by a signal from said discharge gap setter; and

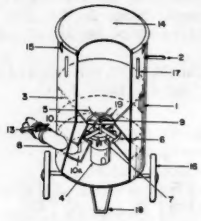
an actuator electrically coupled with said output of said comparison unit and adapted for vertically displacing said crushing bowl with respect to said breaking head when the size of said maximum permissible discharge gap has been exceeded.

4,272,031

VEGETATION PULVERIZER

Chester G. Jines, 1980 SE. Spruce, Hillsboro, Oreg. 97123

Filed Feb. 21, 1979, Ser. No. 6,550
Int. Cl.³ B02C *23/36*
U.S. Cl. 241—46.17 **4 Claims**



1. A vegetation pulverizer and spreader comprising

(a) an upright tank having an upper loading operation,

(b) a first horizontal wall in said tank spaced downwardly from the top of said tank,

(c) a central opening in said wall,

(d) an inverted frusto-conical guide extending upwardly from said wall for guiding material to be treated toward said opening,

(e) fluid inlet means adjacent an upper portion of said tank for admitting fluid,

(f) a horizontally operating cutter blade disposed adjacent said central opening for initially cutting and shredding material received down said guide for producing a slurry,

(g) a second horizontal wall below said first horizontal wall forming a compartment therebetween,

(h) cutter and impeller means in said compartment arranged to receive the slurry from said cutter blade and further reduce the material and mix it with fluid to provide a resulting readily flowable slurry in said compartment,

(i) an upright power driven shaft in said tank driving said cutter blade and said cutter and impeller means,

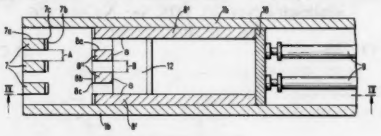
(j) and an outlet radially disposed with relation to said cutter and impeller means through which the latter forces the resulting slurry.

4,272,032

DISINTEGRATOR OF WOODEN PRODUCTS

Bengt Hellberg, Kvartsekelsgatan 3A, S-415 09 Göteborg, Sweden

Filed Apr. 25, 1979, Ser. No. 33,185
Int. Cl.³ B02C *1/04, 1/10*
U.S. Cl. 241—263 **6 Claims**



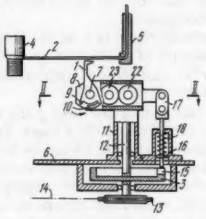
1. Disintegrator of wood products, for example demolition timber containing objects of metal and other hard material, comprising a housing provided with an opening in its top for receiving the wood products intended for treatment, two groups of vertically extending cutting means in the interior of said housing, a movable supporting frame formed in said housing, one group of said cutting means being fixed and located near to one end of said housing and the other group of said cutting means being mounted on said frame, each group of cutting means being in side-by-side and in spaced relationship with each other, the interspace between the cutting means of one group being bridged by the corresponding cutting means of the other group, a power jack connected with said movable supporting frame operable to move said other group of cutting means into overlapping relationship with said one group of cutting means in such manner that cutting edges of the cutting means of both groups slide against each other and cut and disintegrate the wood products in said housing, and an opening in the underside of said housing for feeding-out of the disintegrated material, said frame having a discharge opening in its lower rear portion behind said other group of cutting means which at least in one position of displacement of said frame communicates with said opening in the underside of said housing.

4,272,033

DEVICE FOR FORMING TAPS WHEN WINDING ELECTRICAL COILS

Isaak Y. Feldshtein, ulitsa Rymarskaya, 23, kv. 5; Valery S. Epifanov, prospekt Traktorostroitelei, 65 V, kv. 22; Vladimir N. Olefirenko, ulitsa Roberta Eidemana, 5, kv. 1; Jury I. Karelov, ulitsa Geroev Truda, 26, kv. 74; Alexandr A. Boyarsky, ulitsa Geroev Truda, 47a, kv. 57, and Alexandr N. Pashkov, pereulok Rubezhansky, 24, all of, Kharkov, U.S.S.R.

Filed Apr. 4, 1979, Ser. No. 27,073
Int. Cl.³ H02K *15/09*
U.S. Cl. 242—7.05 B **3 Claims**



1. A device for forming taps when winding electrical wire into coils in a winding zone of a coil winding machine having a machine bed and a coil wire guide, said device comprising:

a casing movable with respect to the wire guide of the machine;

drive shaft means mounted on said casing for rotation relative to said casing;

a projection rigidly secured on said drive shaft means;

hook means for catching the wire, holding it outside of the winding zone and releasing it prior to completing the winding of the next coil, said hook means being rotatably mounted on said drive shaft means and having stop means for interacting with said projection during the rotation of the hook means about said drive shaft means;

elastic member means connected to said drive shaft means and said hook for transmitting rotary motion from said drive shaft means to said hook means;

cyclicly movable means including cam means for imparting motion to said casing during a portion of each complete rotation of said drive shaft means, said motion being such that said hook means is projected into said winding zone; and

common drive means for both moving said cam means and rotating said drive shaft means.

4,272,034

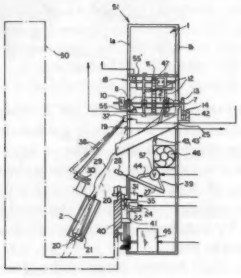
SPOOL-CHARGING DEVICE FOR AUTOMATIC-WINDING-MACHINE MAGAZINES

Milko D. Dimitrov, Sofia, Bulgaria, assignor to SK "Pamukotex", Sofia, Bulgaria

Continuation-in-part of Ser. No. 917,501, Jun. 21, 1978, abandoned, which is a continuation of Ser. No. 740,739, Nov. 10, 1976, abandoned. This application May 1, 1979, Ser. No. 35,093

Int. Cl.[3] **B65H** *54/26, 67/02*

U.S. Cl. 242—35.5 R **7 Claims**



1. A device for charging spools successively into the socket of a winding machine, said device comprising:

a support;

means for advancing said support along said winding machine;

a bin containing previously oriented spools mounted on said support and formed with a discharge slot;

a first fork displaceable on said support and having arms flanking said discharge slot, said arms being provided with opposite rotatable grip members engageable with opposite axial ends of a spool in said bin for withdrawing an engaged spool from said slot;

a pair of coplanar guides extending parallel to the axis of said spool engaged by said fork and disposed along the path of said spool withdrawn from said slot;

a blowing funnel on one of said guides and an aspiration funnel disposed on the other of said guides and means for displacing said funnels along said guides for respectively dislodging a thread end from said spool engaged by said first fork and drawing said dislodged thread end into said aspiration funnel;

means for directing said spool engaged by said first fork after the drawing of said thread end into said aspiration funnel into a respective socket of said magazine; and

means hinged to said support for guiding said thread end drawn by said aspirator funnel to said winding machine.

4,272,035

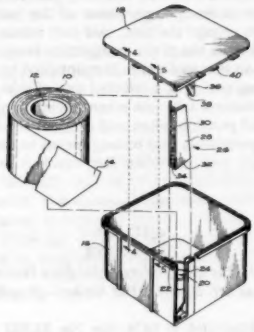
LIGHT LOCK FOR ROLL DISPENSING CONTAINER

Larry Sherman, Macedon, and John J. Niedospial, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,512

Int. Cl.[3] **G03B** *1/10, 17/26*

U.S. Cl. 242—71.1 **7 Claims**



1. A container for light-sensitive strip material, said container comprising:

a body member having (1) a central cavity, (2) a opening through which strip material is loaded into the cavity and (3) a slot through which the leader of the strip material extends when the strip material is loaded in the cavity;

a cover engagable with said body member to close the opening after the strip material is loaded in the cavity;

a slot closure member movable in said slot between a slot-open position and a slot-closed position, said closure member being biased to its slot-open position for receiving the leader of strip material loaded in the cavity; and

cooperative means on said cover and said closure member for moving said closure member to its slot-closed position as said cover closes the opening in said body member.

4,272,036

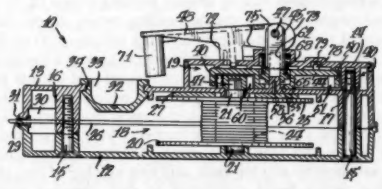
LINE REEL

David R. Watermann, Elgin, Ill., assignor to Keson Industries, Inc., Naperville, Ill.

Continuation of Ser. No. 930,683, Aug. 3, 1978, abandoned. This application May 16, 1979, Ser. No. 39,329

Int. Cl.[3] **B65H** *75/40, 75/16*

U.S. Cl. 242—96 **13 Claims**



1. In a line reel including a spool for winding line thereabout, a case in which the spool is rotatably mounted and having an aperture through which the line extends, and gear means in engagement with the spool for driving the spool to wind or unwind line thereon, the improvement comprising:

a clutch part carried by the gear means;

a rotatable shaft for driving the gear means having a complementary clutch part at one end adapted to releasably engage the clutch part on the gear means and having its other end external of the case, said shaft being movable between a first position in clutched engagement with the gear means and a second position disengaged from the gear means;

means for biasing said shaft into clutched engagement with the gear means; and

a crank for turning said shaft having one end pivotally connected to the external end of said shaft for selective pivotal movement between cranking and locked positions, said crank defining cam means at the one end thereof adapted to engage the case, said cam means being eccentric relative to the pivot connection between the crank and shaft so that said crank is maintained by the action of said biasing means at a selected one of said cranking and locked positions, said cam means maintaining said shaft in disengaged position when said crank is at its locked position and permitting said biasing means to move said shaft to engaged position when said crank is at its cranking position.

4,272,037

LAP CREEL

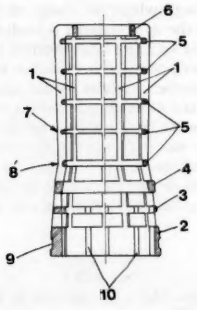
Josef Becker; Hubert Becker, and Matthias Becker, all of Niederforstbacher Str. 80 - 84, 5100 Aachen - Brand, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,803

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845053

Int. Cl.[3] **B65H** *75/20*

U.S. Cl. 242—118.1 **5 Claims**



1. A lap creel having a longitudinal axis and top and bottom ends, comprising rod shaped carrying members (1) each having a substantially rectangular cross-section in a direction extending substantially radially relative to said longitudinal axis, a first number of ring shaped holding means (2, 3) and a second number of ring shaped holding means (5) operatively connected to said rod shaped carrying members (1) to form a cage, each of said carrying members (1) having a longitudinal shape with a first part that widens toward said bottom end of the creel and with a second part that widens toward the top end of the creel, whereby a lower conical cage portion and an upper conical cage portion are formed which merge into each other where said cage has its smallest outer diameter intermediate said bottom and top ends, said first number of ring shaped holding means being connected to said carrying members along said first part thereof so that said ring shaped holding means and said carrying members are substantially flush with one another in the radially outward direction along said lower conical cage portion, said second number of ring shaped holding means being connected to said carrying members along said second part thereof so that said carrying members protrude radially outwardly relative to said ring shaped holding means along said upper conical cage portion, said first number of ring shaped holding means comprising at least one ring located at said bottom end and having inwardly facing, axially extending grooves (10) positioned intermediate adjacent carrying members and radially spaced from one another so that said lap creel is insertable with its top end into another lap creel of the same construction.

4,272,038

THREAD-TENSIONING DEVICE ON A WARP CREEL

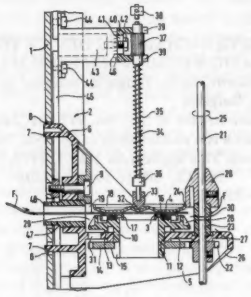
Edwin Wildi, Niederuzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed May 20, 1980, Ser. No. 151,704

Claims priority, application Switzerland, May 31, 1979, 5062/79

Int. Cl.[3] **B65H** *59/24*

U.S. Cl. 242—150 R **10 Claims**



1. Thread-tensioning device on a warp creel, in which thread unwound from a bobbin is guided through in a straight line between discs of a disc brake, a lower disc of which is driven by a drive shaft running outside the disc periphery and an upper disc of which is pressable resiliently against the lower disc, and in which the thread is deflectable, as it leaves the warp creel, by a deflecting device towards a lapping machine, characterized in that:

said drive shaft for the drive of the lower disc at the same time forms the deflecting device for the thread; and

said upper disc is centered peripherally and partly by a part which sits on the drive shaft in a turn-proof manner and causes, in a frictional manner, the upper disc to turn at least intermittently.

4,272,039

ELECTRONIC HANG GLIDER HOOK-UP WARNING SYSTEM

Thomas C. Hollingsworth, 110 Chantilly Dr., Warner Robins, Ga. 31093

Filed Oct. 19, 1978, Ser. No. 953,097

Int. Cl.[3] **B64D** *47/02*

U.S. Cl. 244—1 R **3 Claims**

1. A hang-glider safety hook-up warning system with pilot awareness means for indication to the pilot that the pilot harness has not been hooked or connected to the glider, which comprises:

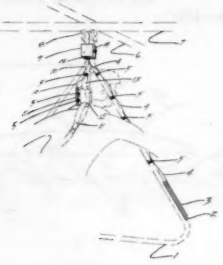
a. touch sensitive switch means, having two operable positions, disposed on the glider control bar at a location so as to be actuated by the pilot's hand during take-off or launch, said touch sensitive switch means being in one operable position when in contact with the pilot's hand and in the second operable position when not in contact with the pilot's hand;

b. switch means disposed at the glider suspension loop or

glider attachment point, said glider attachment point switch means having two operable positions;

c. receptacle means disposed at the pilot harness attachment link or carabiner into which the said glider attachment point switch means can be inserted at a time when the pilot harness attachment link is hooked to or secured to the glider attachment point;

d. magnet means comprising a magnet associated with said receptacle means, said receptacle means receiving the said glider attachment point switch means, said glider attachment points switch means being in one operable position



under the force of said magnet when inserted in said receptacle means, and being in the second operable position when said glider attachment points switch means is not inserted in said receptacle means;

e. awareness means disposed on said glider;

f. circuit means, including a power supply with said circuit means connecting said glider attachment point switch means to said touch sensitive switch means so that said awareness means provides an indication of the pilot being unhooked from or unattached to the glider will only occur when the pilot is holding the glider in launch position.

4,272,040

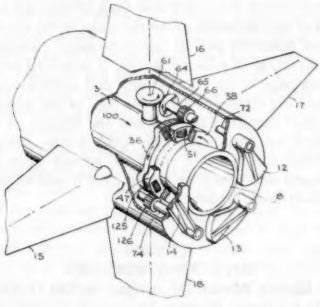
AERODYNAMIC CONTROL MECHANISM FOR THRUST VECTOR CONTROL

Thomas W. Bastian, Fullerton; Garry T. Lacy, Claremont, and John J. Vink, Geyserville, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 14, 1978, Ser. No. 924,594

Int. Cl.[3] F42B *15/18*

U.S. Cl. 244—3.22 **13 Claims**



1. An attitude control system for a rocket propelled missile comprising:

a cylindrical missile body;

rocket propulsion means acting along the axis of the body to propel the missile;

a plurality of control elements pivotably mounted external to the body, each being pivotable about an axis normal to the cylindrical surface of the missile body for aerodynamically controlling direction of the missile in flight;

a servo motor associated with each control element for controlling the angular position of the control elements relative to the missile body;

control circuitry for activating the servo motors to control the flight of the missile;

a plurality of thrust vector control jet tabs for providing pitch and yaw moments by deflecting the rocket exhaust gas;

a plurality of geared summing actuators, each for rotating two of said tabs, each geared summing actuator including:

means for receiving pitch or yaw commands or combinations thereof and for receiving roll commands provided to said fins; and

gear means for removing the roll component from the commands while retaining the pitch and yaw components and actuating a selected one of said tabs with the resultant command.

4,272,041

MODEL HELICOPTER DEVICE

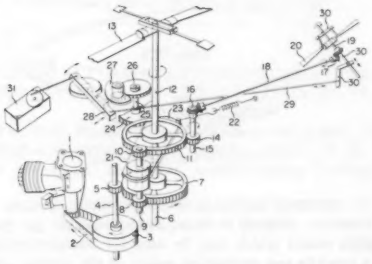
Kenichi Mabuchi, and Tatsuo Katsunuma, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1978, Ser. No. 938,965

Claims priority, application Japan, Sep. 6, 1977, 52/106952

Int. Cl.[3] B64C *27/82*

U.S. Cl. 244—17.21 **6 Claims**



1. A device for a toy helicopter having a tail rotor in the tail portion to prevent the rotation of the helicopter body due to the countertorque of the revolution of a main rotor, said device comprising a tail rotor blade pitch adjusting mechanism for adjusting the pitch of the tail rotor blades, a servomotor for controlling the tail rotor blade pitch adjusting mechanism by receiving remote control signals from the radio control device, a linkage for driving the tail rotor blade pitch adjusting mechanism, a first main gear fixed to a first main shaft to which the main rotor is fixed, a first pinion for transmitting revolving energy to the first main gear, a pinion shaft to which the first pinion is fixed and which is rotatably supported along the first main gear while the first pinion is in mesh with the first main gear, and a rotating angle transmitting mechanism which detects and transmits the rotating angle of the pinion shaft to the linkage, and wherein the rotating angle of the pinion shaft which rotates in accordance with changes in the number of revolutions of the main rotor is transmitted to the tail rotor blade pitch adjusting mechanism via the rotating angle transmitting mechanism and the linkage to automatically adjust the pitch of the tail rotor blades, the rotating angle transmitting mechanism comprising a rotary plate which supports the pinion shaft, said rotary blade being supported by the first main shaft and rotating, together with the pinion shaft around the axis of the first main shaft, an intermediate gear which is fixed to the rotary plate and which transmits the rotating angle of the pinion shaft, and a cam which is in mesh with the intermediate gear and which transmits the rotating angle of the pinion

shaft to the linkage, and wherein the rotating angle of the pinion shaft is automatically transmitted to the linkage and wherein the linkage is constructed so as to be controlled by a servomotor which is remotely-controllable by a radio control device.

4,272,042

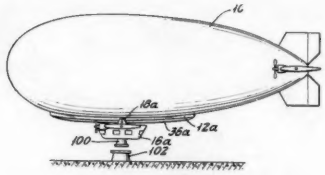
AIRSHIP AND ASSOCIATED APPARATUS AND METHOD FOR ANCHORING SAME

Saul I. Slater, Miami Beach, Fla., assignor to Hov-Air-Ship, Inc.,, Miami Beach, Fla.

Continuation-in-part of Ser. No. 674,278, Apr. 14, 1976, Pat. No. 4,085,912, which is a continuation-in-part of Ser. No. 552,793, Feb. 25, 1975, Pat. No. 3,971,533. This application Jun. 22, 1977, Ser. No. 809,130

Int. Cl.[2] A64B *1/66;* B64F *1/12*

U.S. Cl. 244—115 42 Claims



1. An improved airship having a generally elongate envelope structure adapted to house lighter-than-air gas and any enclosure means which may be used for containing the gas, with a gondola and propulsion means on the airship, wherein the improvement comprises anchoring means which include magnet means mounted to said airship and fixed thereto against translational and pivotal movement, said magnet means adapted to permit rotation of the airship about a vertical axis extending through said magnet means and being capable of activation from a point remote therefrom for attraction to a suitable magnetically attractive anchoring member secured to the ground, such that said airship can be landed and anchored on the ground by personnel on the airship, said magnet means enabling the airship to rotate completely about the vertical axis of said magnet means when said airship is anchored to the ground.

24. A method of landing and anchoring an airship, which comprises the steps of:

causing the airship to descend generally to about ground level at an anchoring site where a magnetically attractive anchoring structure is secured to the ground;

moving the airship to locate rotation-enabling magnet means which are fixedly mounted to the airship against translational and pivotal movement, to a position essentially adjacent the anchoring structure;

actuating the magnet means to permit magnetic attraction between the magnet means and the anchoring member for contact therebetween; and

permitting the airship to rotate about the vertical axis extending through the magnet means for a virtually unlimited number of rotations.

4,272,043

FLUID STREAM DEFLECTING MEMBERS FOR AIRCRAFT BODIES OR THE LIKE

John J. Spillman, Bedford, England, assignor to National Research Development Corporation, London, England

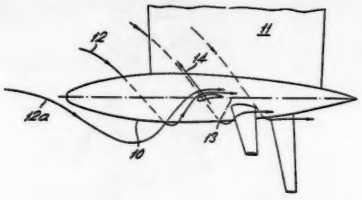
Continuation of Ser. No. 2,182, Jan. 5, 1979, abandoned, which is a continuation of Ser. No. 805,438, Jun. 10, 1977, Pat. No. 4,172,574. This application Feb. 20, 1980, Ser. No. 123,073

Claims priority, application United Kingdom, Jun. 16, 1976, 24943/76; Mar. 1, 1977, 08666/77

The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.

Int. Cl.[3] B64C *23/00*

U.S. Cl. 244—130 2 Claims



1. A body intended for motion within and relative to a mass of fluid in which:

said body presents a surface which will in use form an interface with said mass of fluid;

an array comprising a plurality of members of aerofoil cross-section generated about a smooth camber line without discontinuity and having mountings upon said surface so as to project outwards from said surface in a direction substantially normal to said motion of said body and into the space where a local stream of fluid will form in use, whereby in such use said members will tend to divert said local stream back into the free stream and in so doing experience useful thrust, and in which the cross-section of each said member varies continuously from its root to its tip so that both the said camber of each said member and the incidence of each said member to the said free stream vary continuously as the distance from said surface increases to provide a spanwise variation of incidence upon each said member and to allow for change in the direction of the said local stream as distance from said surface increases; and

said members are staggered so as to have more forward and more rearward members in the direction of the relative motion of said body and said fluid so that the more rearward of said members avoid the wake of the more forward of said members and so that substantial clearance in the said direction of relative motion is provided between the trailing edge of the root of each said more forward member and the leading edge of the root of the adjacent more rearward member, and so that the impact of the more forward members upon the local stream poses a more favorable incidence of the local stream upon the more rearward members than would exist if said more forward members were absent.

4,272,044

KITE CONSTRUCTION

Wayne L. Cooper, Maroa, Ill., assignor to The Hi-Flier Manufacturing Company, Decatur, Ill.

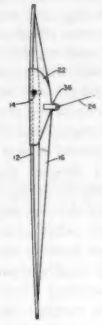
Filed Oct. 5, 1979, Ser. No. 82,414

Int. Cl.[3] B64C *31/06*

U.S. Cl. 244—153 R 15 Claims

1. A kite having at least first and second crossed frame members mounting a skin and further comprising a bracket member secured to said frame members and supporting them in a crossed configuration, said bracket member having a web

portion arranged with a span thereof compressed between both said first and second frame members and said skin, a peripheral edge of said web portion opposite said frame members contacting said skin to dispose said skin in an aerodynamic configuration having at least first and second portions inclined with a dihedral angle therebetween.

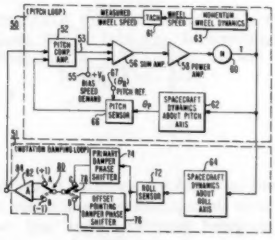


4,272,045

NUTATION DAMPING IN A DUAL-SPIN SPACECRAFT

Kevin J. Phillips, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1979, Ser. No. 25,099
Int. Cl.³ B64G 1/38
U.S. Cl. 244—170 **12 Claims**



1. A method of stabilizing an orbiting spacecraft of the dual-spin type having a spin axis and a characteristic nutation frequency, and further having a platform which can spin relative to a motor-driven spinning wheel, said wheel spinning about the spin axis of the spacecraft, said spin axis being common to said platform and said wheel, a control loop including a motor for driving said wheel and consequently by reaction torques between said wheel and said spacecraft rotating said spacecraft and further including a first sensor and a second sensor, said first sensor oriented to sense motion of said spacecraft about a given geodetic reference lateral axis, and said second sensor oriented to sense pitch errors manifested by rotation of the platform of the spacecraft about the spin axis from a given reference to control the speed of said motor to reduce pitch errors towards said reference, said spacecraft further having cross products of inertia existing on said platform between at least one of the lateral axes and the spinning axis, comprising the steps of:

a. driving said wheel at a speed to thereby rotate said spacecraft about said spin axis;

b. sensing by said first sensor the geodetic referenced lateral motion of the spacecraft about one of said geodetic referenced lateral axes;

c. generating a signal corresponding to the sensed geodetic referenced lateral motion having a cyclic component at the nutation frequency for controlling the torque of the motor;

d. phase shifting the cyclic component of the generated signal by said first sensor at the nutation frequency of said spacecraft by an amount such that the signal from said first sensor is shifted in phase by a first angle such that the first sensor signal is equivalent to a sensor signal of a sensor located on a lateral axis wherein substantially optimum nutation damping is achieved at one angular position of said spacecraft about said spin axis as said spacecraft rotates through a first angular displacement;

e. applying the phase shifted signal to said control loop to control the torque of said motor;

f. phase shifting the cyclic component of the generated signal by said first sensor at the nutation frequency of said spacecraft by an amount such that the signal from said first sensor is shifted in phase by a second angle such that the first sensor signal is equivalent to a sensor signal of a sensor located on a lateral axis wherein substantially optimum damping is achieved at a second angular position of said spacecraft about said spin axis as said spacecraft rotates through a second angular displacement; and

g. applying the second-mentioned phase-shifted signal to said control loop to control the torque of said motor.

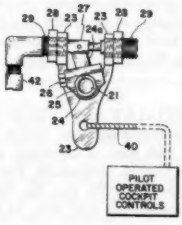
12. A nutation control system for a dual-spin stabilized device having a platform, a wheel, a motor, a nutation sensor and a pitch sensor, in which the invention comprises at least two phase shifting networks selectively coupled to said nutation sensor and to said motor to cause said motor to apply a torque to said device to reduce the amount of nutation, and further, said pitch sensor being coupled to said motor to control the rotation of said device about the axis of said motor.

4,272,046

HYDRAULIC ACTUATOR MECHANISM TO CONTROL AIRCRAFT SPOILER MOVEMENTS THROUGH DUAL INPUT COMMANDS

Stephen C. Irick, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 17, 1979, Ser. No. 67,595
Int. Cl.³ B64C 13/04, 13/36
U.S. Cl. 244—226 **4 Claims**



1. In an aircraft flight spoiler control system having conventional pilot operated cockpit controls, a spoiler mixer control device, a cable linkage to each aircraft wing through which tension is applied by manipulation of the cockpit controls providing a primary input, and, mounted in each wing, a flight spoiler Position Control Unit having a rotating input shaft with a crank to which said cables are attached and apply moments, the Position Control Units in turn actuating the spoilers; the improvement therewith comprising:

means for introducing a supplementary input secondary to the primary input provided by the conventional control system, said means including a one-way coupling whereby forces in the primary input system are transferred to said input shaft and forces introduced by said secondary input system into said input shaft are absorbed by said one-way

coupling before being transferred into the cable linkage of said primary input system;

said means for introducing said secondary input including a fork-shaped input lever-bracket pivotally disposed on the input shaft of said spoiler control unit, control cables attached to the said bracket, said bracket serving to transmit forces from the primary input to said one-way coupling, said bracket further serving to hold said secondary input introducing means allowing said secondary input introducing means to remain in constant proximity to and in direct contact with said input shaft while all of said bracket, one-way coupling, input shaft, and secondary input introducing means are shifted simultaneously in response to said primary target.

4,272,047

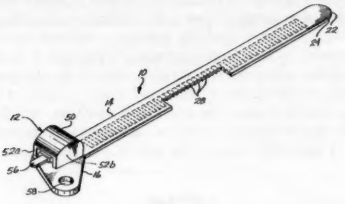
ADJUSTABLE CLAMP

Leslie M. Botka, Bellevue, Wash., assignor to Boeing Commercial Airplane Company, Seattle, Wash.

Continuation-in-part of Ser. No. 781,373, Mar. 25, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 861,802

Int. Cl.[2] **F16L** *3/08*

U.S. Cl. 248—74 PB **13 Claims**



1. An adjustable clamp for supporting tubing or wiring bundles comprising: a head having an aperture extending therethrough; an elongate flexible strap integrally connected at one end to the head and having laterally extending teeth on one side, said flexible strap to extend around a bundle to be supported and a free end to be inserted into the aperture in the head; a pivotable member integrally connected to an edge of the head at a top outlet side of the aperture, said pivotalbe member to extend with a flat side to be adjacent the bottom side of the aperture to be pivoted outward by the inserted strap and engage the laterally extending strap teeth with teeth on a second side of the pivotable member to lock in the strap to prevent counter pivoting in response to a load; and a projection integral to the head having an opening to accept a fastener to permit mounting the clamp to a support structure.

4,272,048

POSITIONALLY ADJUSTABLE SEAT

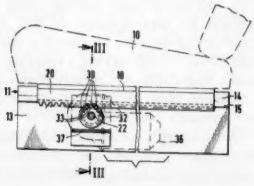
Bernd Klüting, Radevormwald, and Rainer Holweg, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH, Remscheid, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,132

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718928

Int. Cl.[3] **F16M** *13/00*

U.S. Cl. 248—430 **12 Claims**



1. An adjustable seat, particularly for use in a motor vehicle, comprising a base component; a seat component mounted on said base component for movement along a predetermined path relative thereto; means for moving said seat component along said path, including a toothed rack rigidly connected to one of said components, a driving member, a pinion member, and means for mounting said members on the other of said components for rotation about an axis, said pinion member being in mesh with said toothed rack and being axially displaceable relative to said driving member; and means for disengageably coupling said pinion member with said driving member for joint rotation including respective coupling portions on said members which engage and disengage each other upon the relative axial displacement of said pinion member, said driving member including a driving shaft, and a driving element mounted on said shaft for joint rotation therewith, said coupling portions of said driving member being located on said driving element; said other component including a carrier member and a support member rigid with said carrier member and spaced therefrom axially of said driving shaft; said mounting means further including a bushing to support said driving shaft on said support member; and said carrier member and said support member together bounding a compartment in which said pinion member and said driving element are positioned.

4,272,049

MOULD FOR MOULDING SPECIMEN BLOCKS TO BE CUT IN A MICROTOME OR AN ULTRAMICROTOME

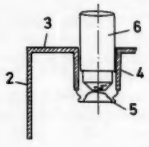
Erik L. Kindel, Älvsjö, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Jun. 14, 1979, Ser. No. 48,363

Claims priority, application Sweden, Jun. 21, 1978, 7807073

Int. Cl.[3] **B29C** *17/14;* **B32B** *31/18;* **C04B** *41/44;* **G01N** *1/06*

U.S. Cl. 249—83 **1 Claim**



1. A mould for moulding specimen blocks to be cut in a microtome or an ultramicrotome, characterized in that it comprises an elongated horizontal plate and two integrally moulded supporting side walls the plate and the side walls being made from a soft heat resistant plastic and the plate being provided with a number of integrally formed depending cavities of a substantially cylindrical upper internal shape corresponding to the desired shape of the specimen block, the plate, side walls and the major upper parts of the cavities having relatively thick walls and the bottom part of each cavity being provided with a thin-walled deformable substantially transparent zone so as to enable the moulded block to be pressed out of the mould by means of deforming the deformation zone, the vertical height of the side walls being greater than the extending depending length of the cavities to prevent contact of the cavities with a horizontal supporting surface.

4,272,050

METHOD AND APPARATUS FOR PRE-CASTING STEEL REINFORCED CONCRETE BOX-LIKE MODULES

Jaime L. del Valle, Rio Piedras, P.R., assignor to Master Modular Homes, Inc., Toa Baja, P.R.

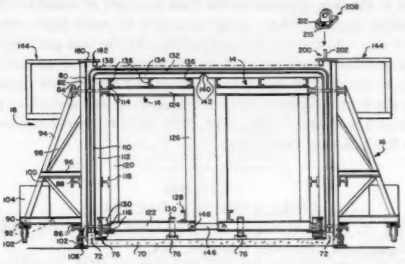
Filed Sep. 14, 1978, Ser. No. 942,377

Int. Cl.[3] **E04B** *1/348*

U.S. Cl. 249—144 **19 Claims**

1. Forms for defining the side walls and roof of a pre-cast box like concrete building module of the type having a floor, a pair of spaced apart side walls extending upward from said floor, and a roof extending between the upper ends of said side

walls, said forms including: a pair of exterior forms and a pair of interior forms; each exterior form comprising a vertical plate of longitudinal extent at least equal to the length of said module and of vertical extent at least as great as the height of the outer surface of said side walls; each interior form including a vertical plate of longitudinal extent at least equal to the length of said module and vertical extent extending to a height about equal to the inner height of said side walls, a horizontal plate of length at least equal to the length of said module,



means joining said horizontal and vertical plates to define a corner, and roller means for movably supporting said interior forms; said two horizontal plates of said pair of interior forms comprising the form support for the roof of said module, said interior forms being independently longitudinally movable relative to one another whereby to enable one to be removed from the interior of a module while the other remains in forming relation with said module whereby to leave only a portion of the roof span unsupported.

4,272,051

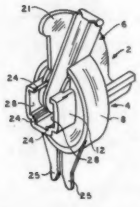
APPARATUS FOR METERING FLUIDS

James A. Huggins, 551 W. Park Ave., Libertyville, Ill. 60048

Filed Jun. 22, 1978, Ser. No. 917,943

Int. Cl.[3] F16K *7/06*

U.S. Cl. 251—6 **18 Claims**



13. A clamp for providing a stable fluid flow rate through a flexible tubing which is adapted to be readily mounted onto the tubing comprising a body having a channel dimensioned to receive the tubing, said channel having a pair of sidewalls and a bottom wall including an anvil for supporting the tubing, and constricting means providing an opposed structure to said anvil and coacting with said anvil for controllably compressing the tubing to establish a stable fluid flow rate through the tubing, said channel having an opening along its entire length for receiving the tubing therein against said bottom wall, means for receiving and retaining said constricting means in an operating position spaced from and adjacent to said anvil, and wherein said constricting means comprises a rotatable cam having a pivot arm extending therefrom and a trunnion adjacent opposite sides of said cam, said trunnions being generally cylindrical in shape and having a flat peripheral surface portion defining a minimum trunnion dimension which is less than the trunnion diameter dimension and wherein said channel constricting means receiving and retaining means includes a slot extending along each said sidewall, each said slot including an initial dimension substantially equal to said trunnion minimum dimension and an arcuate end wall having an effective diameter dimension substantially equal to said trunnion diameter dimension, said slots being adapted to slidingly receive said trunnions and to retain said trunnions upon rotation of said pivot arm.

4,272,052

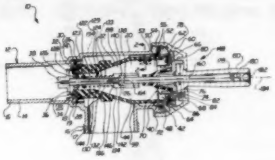
FLUSH VALVES

Robert R. Gidner, Fairview, Pa., assignor to Zurn Industries, Inc., Erie, Pa.

Filed May 7, 1979, Ser. No. 36,524

Int. Cl.[3] F16K *31/143*

U.S. Cl. 251—39 **15 Claims**



1. A flush valve for releasing a predetermined volume of liquid upon actuation thereof comprising:

a. a valve housing having an inlet with liquid under pressure therein, an outlet, and a valve seating surface between said inlet and said outlet,

b. a control valve sealable with said valve seating surface and movable between an open position in which liquid flows from said inlet to said outlet and a closed position in which the flow of liquid from said inlet to said outlet is blocked,

c. a control chamber between said control valve and said housing,

d. means for adjusting the predetermined volume of liquid released by said flush valve upon actuation thereof,

e. means for limiting the volume of liquid released by said flush valve to the predetermined amount,

f. an actuating valve member connected to said control valve and movable between an open position in which said control chamber is connected to one of said inlet and said outlet and a closed position in which said control chamber is disconnected from said one of said inlet and said outlet,

g. said limiting means including an extension member slideably mounted along one end of said actuating valve member,

h. said limiting means having means for resiliently urging said extension member toward the one end of said actuating valve member, and

i. a tripping mechanism mounted to said housing having a tripping member having one end positioned adjacent to said extension member when said control valve is in the closed position, said one end of said tripping member movable upon actuation thereof to move said actuating member to the open position,

j. said adjusting means including means for positioning said tripping member at various positions along said extension member to adjust the predetermined volume of liquid released by said valve.

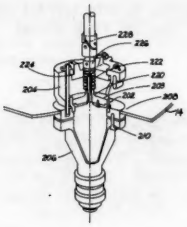
2. A flush valve as described in claim **1** including means for providing restricted flow of liquid from said control chamber to said outlet including an orifice connecting said control chamber to said outlet, a filter for removing particles from the liquid flowing through said orifice positioned adjacent to said orifice and means for retaining said filter adjacent to said orifice.

3. A flush valve as described in claim **2** wherein said means for retaining said filter adjacent to said orifice includes a spring having a coil portion engaging said filter, an extending portion extending through said filter and said orifice and a retainer portion for engaging said control valve.

4,272,053
COMBINATION TOP OPERABLE AND BOTTOM OPERABLE TANK LADING VALVE ASSEMBLY

Richard J. Wempe, and Gunter R. Behle, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Division of Ser. No. 908,184, May 22, 1978. This application Apr. 21, 1980, Ser. No. 142,303
Int. Cl.³ F16K *27/03*
U.S. Cl. 251—144 **5 Claims**

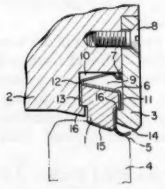


1. A railway tank lading valve assembly comprising: a mounting flange mounted in an opening in the bottom of the tank; said mounting flange including a lading opening; a lading valve movable vertically by rotation between open and closed positions relative to said lading opening; a valve housing including an unloading spout located below said tank bottom mounting flange; a first operator attached to an upper portion of said lading valve extending vertically up through the tank to the upper portion of the tank; said first operator adapted to receive a suitable handle or tool to rotate said first operator and move said lading valve between open and closed position; a second operator, having an upper non-round portion extending into a non-round opening in a lower portion of said lading valve; said second operator including a lower operator extending at least partially through the valve housing and extending outside of said housing having a lower non-round portion whereby said lading valve may also be operated from the bottom of said tank by rotation; said valve housing being maintained in place below said mounting flange with fasteners which define a shear plane, whereby said housing will shear off or drop off along a plane defined by said fasteners and extending between said housing and said mounting flange, said lower operator having separating means therein whereby at least the lower portion of said second operator will shear off and/or drop off by virtue of said separating means leaving the lading valve in place to substantially prevent escape of lading from the tank.

4,272,054
FIRE-SAFE SEALING DEVICE FOR VALVE

Sadazi Zinnai, Yokohama, Japan, assignor to Tokyo Koso K.K., Japan

Filed Jan. 28, 1980, Ser. No. 116,216
Claims priority, application Japan, Jan. 31, 1979, 54-9164
Int. Cl.³ F16K *3/10*
U.S. Cl. 251—173 **1 Claim**

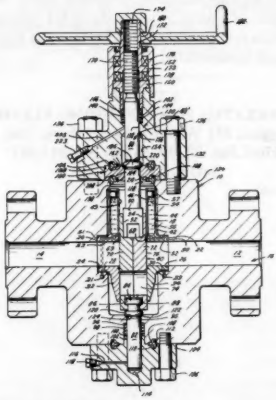


1. A fire-safe sealing device for a valve including a valve body defining a fluid passage and an inner valve positioned in said fluid passage to open or close the fluid flow therethrough, which comprises an annular groove having nearly T-shape in section formed around the fluid passage and defined by the valve body; a seat packing retainer attached thereto; a seat packing of synthetic resin mounted in said annular groove and having a portion projecting from the groove into the fluid passage; shoulders formed at the sides of said projecting part to prevent the seat packing from wholly projecting into the fluid passage; an inclined annular surface comprising a bottom surface at the side opposite to the fluid passage; an annular elastic member made of sheet metal arranged to make tight contact with one side and the bottom surfaces of the seat packing and said annular elastic member further comprising an elastic portion of nearly V-shape extending beyond the portion contacting the bottom surface of the seat packing and a contact portion of nearly semi-circular shape in section extending toward the fluid passage side.

4,272,055
SINGLE DOUBLE BACKSEAT

David P. Herd, Houston, Tex., assignor to McEvoy Oilfield Equipment Company, Houston, Tex.

Continuation of Ser. No. 655,693, Feb. 6, 1976, abandoned, which is a division of Ser. No. 512,368, Oct. 4, 1974, abandoned. This application Oct. 13, 1978, Ser. No. 951,109
Int. Cl.³ F16K *41/16, 41/14*
U.S. Cl. 251—214 **34 Claims**

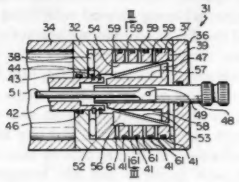


1. A valve comprising:
a valve body having an inlet and an outlet with a chamber therebetween;
closure means for preventing flow through said chamber into said outlet in the closed position and permitting flow through said chamber into said outlet in the open position;
moving means for moving said closure means between the open and closed positions;
first and second cap members sealingly mounted on said body and having means for providing sealing closures for said chamber, said closure means disposed in said chamber and extending through opposite sides of said chamber and into said first and second cap members;
ring means on said closure means for providing a metal-to-metal sealing engagement with said first cap member in at least one of the open and closed positions; and
single seal ring means on said closure means for providing a metal-to-metal sealing engagement with said valve body in said one of the open and closed positions, said closure means including means for permitting limited longitudinal axial reciprocation of said single seal ring means with respect to said ring means.

4,272,056
ROTARY CONTROL VALVE FOR POWER STEERING SYSTEM

Seiji Komamura, and Katsuhiro Suzuki, both of Gifu, Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1980, Ser. No. 111,132
Claims priority, application Japan, Feb. 9, 1979, 54-13903
Int. Cl.[3] F16K *11/083*
U.S. Cl. 251—309 11 Claims

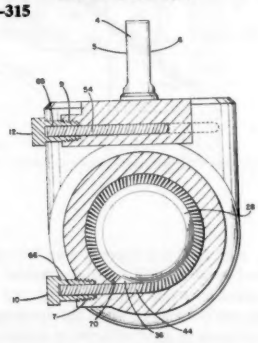


1. A rotary valve comprising a sleeve formed with a conical bore and a rotor having a conical outer surface conjugate to the bore and being disposed therein for relative rotation, the sleeve being formed with a longitudinal internal groove which increases in depth but does not extend radially outwardly from an axis of the bore as a diameter of the bore increases, the rotor being formed with a longitudinal external groove which increases in depth but does not extend radially inwardly toward an axis of the rotor as a diameter of the rotor increases.

4,272,057
VALVE AND FASTENER THEREFOR

Samuel R. Haugland, Reno, Nev., assignor to Delta Dynamics Corporation, Reno, Nev.

Filed Mar. 28, 1979, Ser. No. 24,789
Int. Cl.[3] F16K *5/06*
U.S. Cl. 251—315 5 Claims

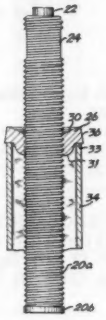


1. In a fluid flow valve assembly comprising
a valve housing having a valve chamber formed by inner walls of the valve housing and flow ports connectible to a fluid flow line,
a generally spherical valve body rotatably mounted in the valve chamber and having an axial passage therethrough,
means for rotating the valve body within the valve chamber,
a valve seat axially slidably mounted within the valve chamber comprising a cylindrical ring having a circumferential sealing forward surface adjacent the valve body,
the improvement therein which comprises
(a) a uniform circumferential recess on a rearward portion of the seat,
(b) a circumferential shoulder on the valve chamber wall, said recess and shoulder forming an annular channel,
(c) a port in the valve housing communicating with the channel and opening tangentially into the channel,
(d) an elongate flexible retainer fabricated from flat wire wrapped helically around a core member, substantially incompressible along its cross-section, located in the channel thereby preventing axial movement of the seat away from the valve body, said retainer being insertable and removable through the port in the valve housing, and
(e) biasing means acting along the sliding axis of the valve seat to urge the retainer against the valve body.

4,272,058
SCREW AND NUT ARRANGEMENT FOR JACK POSTS

Gordon L. Van Santen, Woodstock, Canada, assignor to Pliotron Corporation of Canada Limited, Stoney Creek, Canada

Filed Sep. 5, 1978, Ser. No. 939,116
Claims priority, application United Kingdom, Sep. 6, 1977, 37204/77
Int. Cl.[3] B66F *3/08*
U.S. Cl. 254—98 3 Claims



1. In a jack post, the improvement comprising a screw having a minor unthreaded end portion and a major threaded portion, a spigot extending from the end of the threaded portion and a pair of flats formed in the threaded portion to allow application of a wrench for turning the screw, the unthreaded end portion being adapted to prevent movement therepast of a nut received in threaded engagement on the threaded portion during extension of the jack post, and said screw being free of any transverse bore therethrough, said nut being of stamped sheet metal and being such that the threaded length exceeds the metal thickness at the edges of the nut, said nut having a substantially flat annular tube engaging surface on which is provided protuberances for engaging in the corners of a square tube, said nut having a protrusion surrounding the threads thereof, said protrusion being surrounded by said flat annular surface, and said nut having side surfaces which converge away from said flat annular surface towards the end of the nut remote from said protrusion, said nut being dimensioned so that said side surfaces engage the interior of an end of an outer tube with the nut received partially within the tube in a collapsed, packaged condition of the jack post.

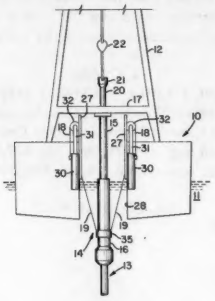
4,272,059
RISER TENSIONER SYSTEM

Jere A. Noerager; Daniel G. Taft, and John M. Bednar, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 916,404, Jun. 16, 1978, abandoned. This application May 21, 1979, Ser. No. 40,241
Int. Cl.[3] E21B *7/12*
U.S. Cl. 254—392 20 Claims

1. A tensioner system for a riser pipe extending between an aperture formed in a floating vessel and the bottom of the sea comprising
a plurality of guide means fixed onto the floating vessel and positioned in alignment with said aperture;

a plurality of guide members being restrained by said guide means from substantial lateral motion relative to the vessel, said guide means permitting independent relative vertical motion of each of the guide members;



means on said vessel for applying vertical tension to said guide members; and

a plurality of fixed-length, tension-carrying means extending from said guide members to said riser pipe for transmitting tension from said guide members to said riser pipe.

4,272,060

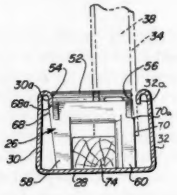
FENCE SYSTEM

Robert T. Stafford, 5112 Forest Ave., Downers Grove, Ill. 60515

Filed Jan. 12, 1979, Ser. No. 2,944

Int. Cl.³ E04H *17/16*

U.S. Cl. 256—24 **15 Claims**



1. A fence section comprising at least one rail having a cross-sectionally U-shaped configuration including a base panel and a pair of side panels,

a fence panel having an end portion disposed within the rail intermediate the rail side panels,

a clip for maintaining the fence panel end portion within the rail disposed at least partly within the rail intermediate the fence panel end portion and one of the side panels of the rail and urging the panel end portion into engagement with the other of said rail side panels,

and a runner disposed within the rail intermediate the side panels thereof, the end portion of the fence panel being spaced apart from the base panel of the rail by the runner.

4,272,061

VARIABLE PITCH RAIL SYSTEM

Howard Suckno, Livingston, N.J., assignor to Suckno Brothers Company, South Plainfield, N.J.

Filed Nov. 28, 1979, Ser. No. 97,903

Int. Cl.³ E04H *17/00*

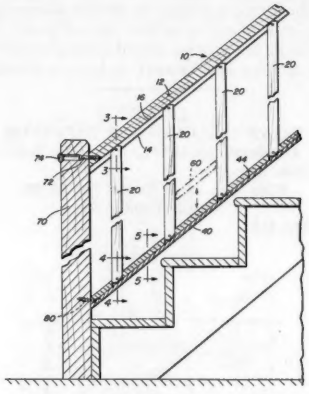
U.S. Cl. 256—67 **1 Claim**

1. A variable pitch railing system comprising:

a hand rail having a lower surface, said lower surface having a longitudinally extending, downwardly opening channel formed therein, said downwardly opening channel being formed with first and second side walls, said first side wall having apertures directed therethrough for receiving first pivot pins, said second side wall having sockets formed therein, said second side wall sockets extending only partially through said second side wall, said first side wall apertures and said second side wall sockets being respectively axially aligned whereby one of said first pivot pins may be inserted through one first side wall aperture and into engagement with one second side wall socket;

a shoe rail having an upper surface disposed in a facing opposed relation to said lower surface of said hand rail, said upper surface having a longitudinally extending, upwardly opening channel formed therein, said upwardly opening channel being formed with third and fourth side walls, said third side wall having apertures directed therethrough for receiving second pivot pins, said fourth side wall having sockets formed therein, said fourth side wall sockets extending only partially through said fourth side wall, said third side wall apertures and said fourth side wall sockets being respectively axially aligned whereby one of said second pivot pins may be inserted through one third side wall aperture and into engagement with one fourth side wall socket;

a plurality of balusters extending between said hand rail and said shoe rail, said balusters having first and second ends with apertures formed therein and extending therethrough, said first and second ends being positionable within said downwardly opening channel and said upwardly opening channel and said first and second pivot pins being positionable through the apertures in said first and second ends so as to effectively secure said balusters to said hand rail and said shoe rail, said first and second ends of said balusters further including first and second oblique, flat chamfered surfaces cut relative thereto so as to permit a variable pitch pivotal movement of said balusters about said first and second pivot pins, said first and second chamfered surfaces being on opposite sides of said balusters and lying in a spaced apart parallel planar relationship with the chamfered surfaces limiting the pivotal movement between the rails and balusters and the outer ends of the chamfered surfaces being located between the walls of the channels in all angular positions of the balusters and rails; and



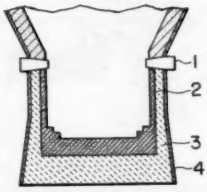
at least one fillet having a length approximately equal to a distance between adjacent balusters, said at least one fillet being dimensioned with a cross section approximately equal to that of said upwardly opening channel for substantially filling the space in said channel between adjacent balusters.

4,272,062

BLAST FURNACE HEARTH

Shigeru Fuziwara, and Shinichi Tamura, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 30, 1979, Ser. No. 99,025
Claims priority, application Japan, Dec. 18, 1978, 53-155961
Int. Cl.³ F27B *14/00*
U.S. Cl. 266—284 **4 Claims**



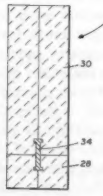
1. A blast furnace hearth for melting iron comprising carbon bricks at least in the internal surface layer of said blast furnace hearth, said bricks consisting essentially of a carbonaceous material, a carbonaceous binder and (1) a Si—N—O composition interspersed throughout the bricks consisting essentially of fibrous fine grained crystals of Si_2ON_2 present in such quantities as to fractionize the pores and fill part of the discontinuous pore openings in the brick, thereby reducing the pore size of the bricks to less than 5 μm, and (2) said bricks also containing SiC therein in amounts sufficient to inhibit the formation of cracks due to heat contraction.

4,272,063

BRICK ASSEMBLY FOR USE IN METALLURGICAL VESSELS

Clyde E. Lawhon, Birmingham, Ala., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 23, 1979, Ser. No. 41,660
Int. Cl.³ C21B *7/02*
U.S. Cl. 266—286 **3 Claims**



1. A metallurgical vessel for making steel having an outer metal shell, a refractory lining adjacent the shell and a removable relatively flat bottom section having an outer safety lining and an inner working lining composed of refractory brick, certain of said working lining brick being secured to certain of said safety lining brick with a metal anchor without contacting the metal shell.

4,272,064

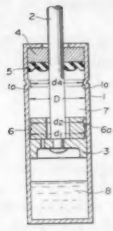
GAS SPRING

Teiji Katsumori, and Kunio Ishida, both of Yokohama, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Aug. 2, 1979, Ser. No. 63,341
Claims priority, application Japan, Aug. 18, 1978, 53-100773
Int. Cl.³ F16F *9/43*
U.S. Cl. 267—64 R **5 Claims**

1. In a gas spring comprising an outer sheath having a substantially uniform inner diameter (D) and an annular convex formed on the inner surface of said outer sheath, said annular convex having an inner diameter (d4), a piston-rod unit slidably received in said outer sheath, and a stopper received in said outer sheath and having a substantially uniform outer diameter (d1), said stopper having formed in the outer surface thereof an annular recess for engaging said annular convex and for thereby holding said stopper in position within said outer sheath, said annular recess having a bottom diameter (d2), the improvement wherein:

said annular recess is formd in said outer surface of said stopper at a position intermediate upper and lower surfaces of said stopper; and



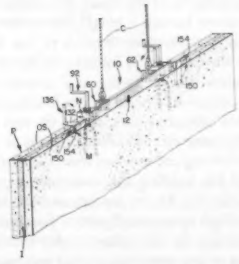
said outer diameter (d1) of said stopper is greater than said bottom diameter (d2) of said annular recess and said inner diameter (d4) of said annular convex, but smaller than said inner diameter (D) of said outer sheath, whereby there is a clearance between said inner surface of said outer sheath and said outer surface of said stopper, and whereby when said annular recess of said stopper is not engaged with said annular convex of said outer sheath said stopper is freely movable within said outer sheath, such that said stopper may be easily inserted into said outer sheath without scratching said inner surface of said outer sheath or said outer surface of said stopper.

4,272,065

BUILDING PANEL ERECTION BRACKETS

Thomas W. Steenson, Richmond Hill, and W. Donald Paton, Aurora, both of Canada, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Feb. 12, 1980, Ser. No. 120,837
Int. Cl.³ B66C *1/22*
U.S. Cl. 269—46 **4 Claims**



1. An improvement in a building panel lifting means which is used to position an insulated building panel having lifting brackets embedded therein, the lifting means including a base member, cable attaching means fixed to the base member, bolt accommodating means fixed to the base member, a bolt attachable to the embedded lifting bracket and bolt attaching means for attaching the bolt to the base member via the bolt accommodating means, the improvement comprising:

a panel lifting means rotatably and retractably mounted on

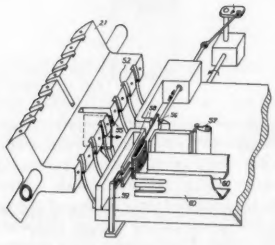
the base member, said panel lifting means including a collar mounted on the base member and having a bore defined therethrough, a crank having one portion thereof rotatably and retractably received in said collar and a lifting plate attached to said crank for rotation and retraction therewith, said crank being retractable transversely of said base member.

4,272,066

APPARATUS FOR PRODUCING COMPRESSES FOR COVERING WOUNDS

Horymir J. Bouda, Katleingasse 10, Wien-Mauer, Austria (A-1238)

Filed Sep. 6, 1978, Ser. No. 940,003
Claims priority, application Austria, Sep. 9, 1978, 6511/78
Int. Cl.[3] B65H *45/18*
U.S. Cl. 493—418 22 Claims



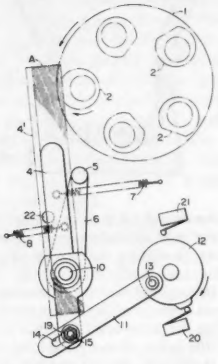
1. Apparatus for producing compresses to cover wounds made from muslin strips having folded over edges, comprising: a rotary drum on which a muslin strip is cut and folded, a folding device mounted adjacent the drum, for effecting additional folding of the compresses which have been folded on the drum, the drum being in the form of a suction roll with cutters distributed over its circumference, said drum including a plurality of suction openings disposed in rows about the periphery of the drum, the cutters being disposed between the rows of suction openings, the drum including a plurality of fluid passageways which extend radially inwardly from the openings, a tube in the drum disposed radially inwardly of the passageways, the passageways being in fluid communication with the tube, the tube being connected to a suction pipe; a counterpiece which cooperates with the cutters, the counterpiece being mounted independently of the drum; the compresses which are folded on the drum having a length dimension, which length dimension runs transverse to the axis of the drum when the compress is on the drum in its folded condition; the circumference of the rotary drum moving at a certain circumferential speed during rotation of the drum, the folding device having a collector device which rotates about an axis parallel to the drum axis at the same circumferential speed as the drum itself, means for transferring compresses from the drum to the collector device and for holding the compresses on the collector device, said collector device having at least two radially extending arms which have radially outer free ends describing an outer circumference of the collector device, the distance between the arms of the collector device measured at the outer circumference of the collector device corresponding to the length dimension of the compresses folded on the drum, the collector device having slots in the arms thereof which are aligned in a plane substantially normal to the axis of the collector device, said slots being sized to receive a movable folding plate, and means to reciprocate said folding plate in a direction normal to the axis of said collecting device toward and into cooperative engagement with folding fingers which act to grasp a compress and fold respective halves thereof together.

4,272,067

APPARATUS FOR HOLDING STACK OF SHEETS IN SHEET COUNTING MACHINE

Minoru Yoshida, and Junichi Arikawa, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,293
Claims priority, application Japan, Dec. 22, 1978, 53-159636
Int. Cl.[3] B65H *3/10, 3/42, 1/24*
U.S. Cl. 271—95 3 Claims



1. In a machine for counting a number of sheets wherein a stack of sheets to be counted is brought in turn into abutment against a plurality of rotary suction heads carried on a rotary cylinder whereby the sheets are attracted by the suction heads through suction and deflected one sheet after another away from the remaining stack of sheets, an apparatus for holding the stack of sheets comprising: a holder for holding the stack of sheets, said holder being rotatable in the direction toward and departing away from said cylinder for bringing the stack of sheets in turn into abutment against the suction heads; a first spring for urging said holder in the direction toward said cylinder; a support rod for holding the stack of sheets between the support rod and the holder; a second spring for urging the support rod in the direction away from said cylinder; said first spring presenting a larger tensile force than that of said second spring to subject the stack of sheets held between said holder and the support rod to the effect of the tensile force difference between the tensile forces of said first and second spring; friction means adapted to decrease by the frictional action thereof the effect of said tensile force difference; adjustment means for adjusting the degree of the frictional action of said friction means; a rotating cam adapted to drive and stop driving said rotatable holder; and a link member interconnecting said cam and a free end portion of said holder, said link member having in an end portion thereof an elongated slot for connection with said free end portion of the holder in such a manner that said free end portion of the holder is permitted to move along said elongated slot; wherein said friction means and said adjustment means are provided for the interconnecting portion of said holder and said link member.

4,272,068

ROLL-WAVE SHEET SEPARATOR STRUCTURE

Stephen P. Garrison, Austin, and Elmer L. B. Kroeker, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

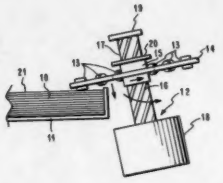
Filed Jun. 29, 1979, Ser. No. 53,484
Int. Cl.[3] B65H *3/06*
U.S. Cl. 271—117 8 Claims

1. Sheet separating apparatus comprising:
means for supporting a stack of sheets, and
sheet separating means mounted adjacent to said stack comprising:

a rotatable shaft having a helical peripheral thread coaxial with said shaft,

a follower rotatable about said shaft following said helical thread to move along the shaft axis,

at least one circular element supported on said follower,



means for rotating the shaft in one direction to drive said follower and said at least one circular element against the surface of the outermost sheet in said stack to shingle said sheet from said stack, and

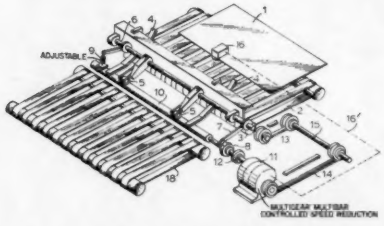
means for abruptly stopping the rotation of the shaft whereby said follower and said element moves along said shaft back out of engagement with said sheet surface.

4,272,069

METHOD OF AND APPARATUS FOR SLOWING SHEETS CARRIED BY HIGH-SPEED CONVEYORS BEFORE DEPOSIT ON STATIONARY PLATFORMS OR LOW-SPEED CONVEYORS

Merton L. Matthews, Westerly, R.I., assignor to Maxson Automatic Machinery Company, Westerly, R.I.

Filed Jan. 8, 1979, Ser. No. 1,430
Int. Cl.³ B65H *29/68*
U.S. Cl. 271—182 **11 Claims**



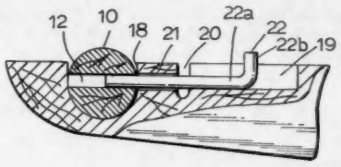
1. A method of slowing the delivery of sheets carried by a high-speed conveyor before deposit upon such an area as low-speed conveyors and stacking platforms, that comprises, feeding successive sheets at relatively high speed over a slow-down region preceding such an area; monitoring the approach of the rear portion of each successive high-speed sheet towards said region and thereupon grabbing such rear portion and decelerating the grabbed sheet to a predetermined slower speed; releasing the grabbed sheet to enable delivery of the same at said predetermined slower speed upon said area; and thereupon feeding the leading portion of the next successive sheet at said high speed over the said region, the grabbing and decelerating being effected by means that is moving at a speed substantially the same as said high speed when said rear portion is grabbed and that is thereupon gradually decreased in speed to decelerate the grabbed sheet to said slower speed.

4,272,070

COMBINATION WALL MOUNTED DANCE BARRE AND EXERCISE ROD

Dianne Schachner, and Barbara Zimmerman, both of Potomac, Md., assignors to Body Design, Incorporated, Potomac, Md.

Filed Dec. 28, 1979, Ser. No. 108,274
Int. Cl.³ A63B *1/00*
U.S. Cl. 272—62 **4 Claims**



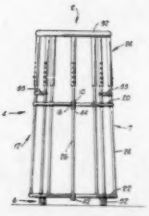
1. A combination wall mounted dance barre and exercise rod, comprising a pair of longitudinally spaced support means, mounting plate means on one end of each support means for mounting said support means on a wall with the support means projecting laterally from the wall, said support means having grooves adjacent the free ends thereof extending parallel to the direction in which the support means are spaced, a rod in said grooves and having holes therethrough at least at the positions at which said rod is supported in said grooves on said support means, and a quick release bolt means horizontally slidable in said support means for movement into and out of said holes for removably holding said rod in said grooves and preventing said rod from rotating about the longitudinal axis thereof relative to said support means, whereby when said rod is mounted on said support means it serves as a dance barre and by moving said bolt means out of said holes in said rod said rod can be removed from said support means and be used as an exercise rod.

4,272,071

WALKER APPARATUS

Barbara A. Bolton, 101 NE., 11th St., Moore, Okla. 73160

Filed Apr. 25, 1979, Ser. No. 33,160
Int. Cl.³ A61H *3/04*
U.S. Cl. 272—70.4 **4 Claims**



1. A walker apparatus for assisting a person who has a walking disability to move about in a substantially erect posture and by means of that person's own strength, comprising:

a support structure having a plurality of structural members interconnected to define a shape approximating a truncated cone, said support structure having a height which is vertically adjustable to extend from a region near the surface on which said support structure is placed to the underarms of said person using said walker, said structural members including:

a plurality of horizontally disposed ring members, each having first and second curvilinear elements interfacing at joining means for providing pivotation about an axis common to all said ring members;

a plurality of strut members interconnected between re-

spective ones of said curvilinear elements of said ring members to concentrically orient and vertically separate said ring members thereby establishing a lowermost ring member and an uppermost ring member; and

an axial member associated with said joining means of each ring member and extending from said lowermost ring member to said uppermost ring member longitudinally along the forward portion of said walker apparatus for providing said common axis; and

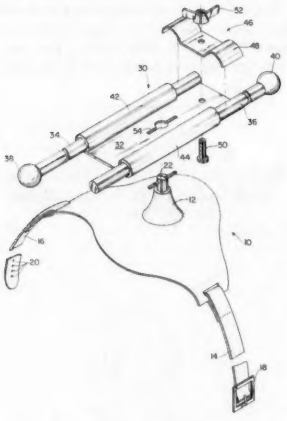
means for aiding the stabilization and movement of said support structure, said means being connected to one of said structural members at said region near the surface on which said support structure is placed and extending from said structural member to said surface.

4,272,072

WAIST MOUNTED EXERCISE DEVICE

Kasimir C. Kusmer, 7220 Sutliff St., Burnaby, B.C., Canada V5A 1M9

Filed Jan. 25, 1980, Ser. No. 115,501
Int. Cl.[3] A63B *69/10, 21/26*
U.S. Cl. 272—71 **6 Claims**



1. A waist mounted exercise device comprising:

a waist encircling member which is adapted to be placed relatively immovably around a user's waist;

a pair of elongate rods, each said rod having a distal and a proximal end;

an end member on the distal end of each rod which can be easily grasped by the hand of the user;

a bracket means for receiving the proximal ends of said rods that the distal ends of each rod are positioned on opposite sides of said bracket;

holding means for adjustably attaching said rods to said bracket means; and

means for removably and rotatably mounting said bracket means on said waist encircling member;

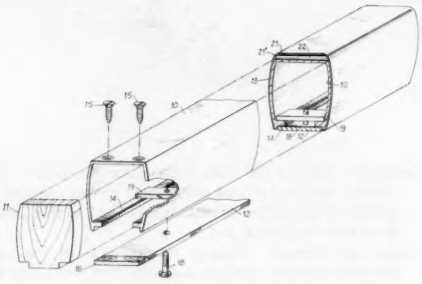
such that exercise is performed by grasping said end members on said rods and moving said end members with the hands in a swimming motion causing the torso to sway back and forth.

4,272,073

ALUMINUM BALANCE BEAM

Richard W. Grosser, Boone, and Virgil L. Long, Sr., Jefferson, both of Iowa, assignors to AMF Incorporated, White Plains, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,830
Int. Cl.[3] A63B *7/08*
U.S. Cl. 272—111 **3 Claims**



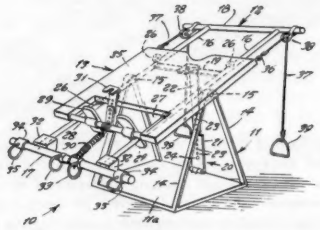
1. An aluminum gymnastic balance beam comprising an elongated extruded aluminum box-shaped member which is open at its bottom and opposite ends, said box-shaped member being thin walled relative its exterior dimensions, closure means for said ends, closure means for said bottom, said last-mentioned closure means being anchored to said beam and having means thereon which is adapted to have support struts connected thereto, said member having a general U-shape in cross-section, the open side of said U-shape facing down, a pair of spaced opposite flanges formed inside said member adjacent the bottom of the open side of said U-shape, said bottom closure means comprising a series of elongated plates extending along said beam at its bottom, and means clamping said plates to said flanges with said flanges being positioned between said clamping means and plates.

4,272,074

BODY BUILDING APPARATUS

Mihai Sferle, 147-25 10th Ave., Whitestone, N.Y. 11357

Filed Oct. 29, 1979, Ser. No. 89,530
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—120 **5 Claims**



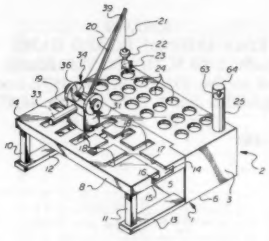
1. A body building apparatus comprising a pyramidal support, a rectangular frame pivotally mounted on the apex of the support at a point substantially intermediate its ends to permit the frame to assume a variety of postions with respect to the horizontal and about the apex of the support, a platform slidably mounted on the frame to seat the user, gripping means associated with the frame which the user pulls to move the platform on the frame against his own weight and the force of gravity and an adjustable spacer depending downwardly from the frame for setting the incline of the frame with respect to

horizontal and to the apex of the support so as to vary the resistance of the platform to movement along the frame.

4,272,075
FISHING GAME

Thurmond J. Rogers, Jr., 7245 Fairbanks-N. Houston, Houston, Tex. 77040

Filed Oct. 1, 1979, Ser. No. 80,997
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—1 E **14 Claims**



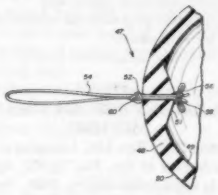
1. A fishing game comprising
a box shaped structure having a closed top wall, said top wall having a plurality of apertures therein for selectively fishing therethrough,
a plurality of open-top, vertically-oriented cylindrical receptacles positioned one beneath each of said top wall apertures,
a plurality of fish of magnetic material and of predetermined size and weight, adapted to be positioned one in each of said receptacles to be retrieved therefrom,
electric signal means for said game,
electric power means for selectively energizing said electric signal means,
means forming a table secured to and supported on said box shaped structure extending substantially co-planar with said top wall,
means forming a track of predetermined pattern in said table,
a movable fishing pole including a manually rotatable spool with a fishing line wound thereon and supported by the end of said pole,
a movable base supported for movement in said track and including means supporting said fishing pole for movement thereon,
magnetic means supported on said fishing line for movement into and out of selected holes in said top wall into juxtaposition with preselected receptacles to pick up the magnetic fish positioned therein, and
means on said magnetic means operable upon engagement with the top of one of said receptacles to complete an electric circuit from said electric power means to said electric signal means to energize the same.

4,272,076
TETHERABLE GAME BALL

Jae M. Song, 225/46 Yeunhi/dong, MA PO/KU, Seoul, Rep. of Korea, and Samuel B. Ligon, 5505 Emerson, Dallas, Tex. 75209

Filed Dec. 14, 1979, Ser. No. 103,458
Int. Cl.[3] A63B *39/00, 43/02*
U.S. Cl. 273—58 C **4 Claims**

1. A game ball that is securable to a tether comprising:
a. a resilient spherical hollow ball having an interior surface and an aperture extending from the interior surface to the exterior surface;
b. a flexible line of predetermined length having two ends extending through said aperture to a position within said hollow ball to form a loop located exteriorly of said hollow ball for securing the tether thereto, both of said ends being knotted independently of each other, said knots being located within said hollow ball and each of said knots being larger than the diameter of said aperture for restraining said line from being pulled from said hollow ball; and

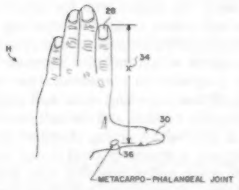


c. a boss located interiorly of said hollow ball, said boss being adjacent to and surrounding said aperture for distributing forces exerted between said hollow ball and said line and for reinforcing said hollow ball adjacent said aperture, said aperture extending through said boss, wherein said boss and said ball form a unitary mass.

4,272,077
GOLF CLUB PUTTER GRIP

Alice C. Spivey, Rte. 4 - Box 1385, Pell City, Ala. 35125

Filed May 14, 1979, Ser. No. 38,681
Int. Cl.[3] A63B *53/14*
U.S. Cl. 273—81 R **12 Claims**



38

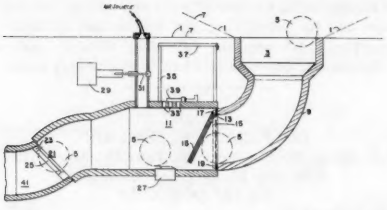
GRIP SIZING CHART		
GLOVE SIZE	X-FACTOR CM.	GRIP (circumference) CM.
WOMEN SM. & MED.	12 or >10	10
WOMEN LARGE & MENS SM.	14 or >12	12
MEN MED. & LARGE	16or>14	14
MEN X-LARGE	17or>15	15

9. The method for custom designing a golf club putter grip for a particular individual golfer so that the dominant hand may grip the putter tightly while enabling the muscles of the non-dominant hand to be in a muscle relaxed and muscle balanced position during putting so that the non-dominant hand will not override the dominant hand and freeze on the club during putting thereby causing an interruption or jerk in an otherwise smooth putting stroke, said method comprising the steps of:
(a) establishing the correlation between progressive X factors (the distance between the tip of the index finger and the first bony prominence of the metacarpo phalangeal joint of the thumb) with their associated approximate grip circumference and setting it out in the following chart:

X-FACTOR CM.	GRIP (circumference) CM
12 or > 10	10
14 or > 12	12
16 or > 14	14
17 or > 15	15

(b) determining and selecting the appropriate grip circumference for said individual golfer from said chart as determined by the golfer's X factor;
(c) measuring the widths of the golfer's non-dominant and dominant hands;
(d) forming said grip with a length at least equal to the width of the said non-dominant hand, and
(e) forming said putter grip with an outside circumference as determined by said chart.

4,272,078
GAME BALL TARGET RETURN APPARATUS AND METHOD
Richard H. Vinette, P.O. Box 191, Lanesboro, Mass. 01237
Continuation-in-part of Ser. No. 31,902, Apr. 20, 1979, abandoned. This application Jun. 4, 1980, Ser. No. 156,443
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—182 R **17 Claims**

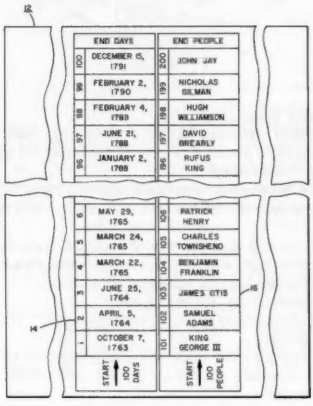


1. In a game comprising a target area to which a ball is to be played, a hole in the target area for receiving the ball once played and a ball return means for returning the ball received by the hole to a selected location, the improvement comprising a ball return means which includes a pressurizable ball receiving chamber, a conduit in communication with the hole and having a ball entrance opening in the ball receiving chamber, a door separating the conduit and the ball receiving chamber, an exit located in said ball receiving chamber through which said ball is able to pass, a source of fluid under pressure, means for admitting the fluid under pressure into said chamber in an amount sufficient to drive the ball from the chamber to the selected location upon receipt of a signal, and means for sensing the presence of a ball in the chamber and thereafter generating a signal to said fluid admitting means to admit fluid under pressure into said chamber, thereby to drive said ball from said chamber to the selected location.

4,272,079
THREAD WOUND GOLF BALL
Shinichi Nakade, Itami, and Michihiro Tanaka, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Sep. 25, 1979, Ser. No. 78,826
Claims priority, application Japan, Oct. 2, 1978, 53-121870
Int. Cl.³ A63B *37/06, 37/12*
U.S. Cl. 273—225 **5 Claims**

1. A golf ball which comprises a rubber thread-wound core having coated on the surface thereof such that it penetrates the reticulate structure thereof an ionomer resin latex comprising 30 to 60% by weight of solid content of an ionomer resin composition comprising a mono-olefin and at least one unsaturated monocarboxylic or dicarboxylic acid having from three to eight carbon atoms having an ion crosslinkage with an unsaturated monocarboxylic or dicarboxylic acid ester, and a ball shell which covers the surface of the coated thread-wound core such that it is integrally bonded thereto, said ball shell coating comprising an ionomer resin comprising a mono-olefin and at least one unsaturated monocarboxylic or dicarboxylic acid having three to eight carbon atoms having an ion crosslinkage with an unsaturated monocarboxylic or dicarboxylic acid ester.

4,272,080
EDUCATIONAL BOARD GAME
Edward P. Breslin, 5103 N. 15th St., Philadelphia, Pa. 19141
Continuation of Ser. No. 833,979, Sep. 16, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,473
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—249 **7 Claims**



1. An educational board game relating to a particular subject and being played with tokens representing the different players, said game comprising:
a game board being divided to include a plurality of separate paths, at least two of which are adjacent to each other, said tokens being movable along any one of said paths;
each path being divided into discrete spaces, each space in one of said two adjacent paths being adjacent to a space in the other of said two adjacent paths, and each of said spaces having indicia imprinted thereon, wherein the printed indicia of adjacent pairs of spaces do not relate to each other, and wherein the printed indicia of each said spaces comprises written information containing different types of data relating to the subject of the game, each space further including one of a sequential number to indicate its position within its respective path;
move directing means operable by the players to determine, on the basis of chance, the number of spaces within a path that the tokens should be moved; and
an informational aid which relates to and provides information about the printed indicia of the spaces,
said informational aid comprising a plurality of sets of information items, one set for each path, each set having as many members as there are spaces on the respective path, each member of said sets comprising information relating to the indicia printed on the corresponding space on said path,
said information aid further comprising a plurality of sets of questions, one set for each path, each member of each set of questions relating to the subject matter found on a space

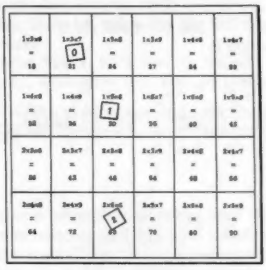
in the corresponding path other than the space corresponding to said member.

4,272,081

GAME WITH BOARD AND TOKENS

James C. Broom, The Hermitage, Burtenshaw Rd., Thames Ditton, Surrey, England

Filed Nov. 7, 1978, Ser. No. 958,412
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—265 **5 Claims**



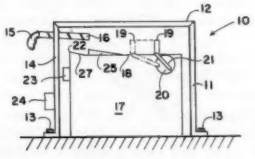
3. Game equipment comprising a set of 24 cards, each card in the set having numerical characters depicting (a) a different mathematical sum involving the combination of three numerical factors, and (b) the three numerical factors of that sum, said factors comprising nine different numerical characters, each sum being unique with regard to its selection of one of each of the three different groups of numerical factors, the characters for the first group of factors having just two alternatives, the characters for the second group of factors having just three alternatives, and the characters for the third group of factors having just four alternatives.

4,272,082

COIN PROJECTING AMUSEMENT DEVICE

Stephen P. Shoemaker, Jr., 70 Tenth St., Hermosa Beach, Calif. 90254

Filed Oct. 10, 1979, Ser. No. 83,376
Int. Cl.³ A63F *7/28, 7/30*
U.S. Cl. 273—356 **4 Claims**



1. An amusement device, comprising:

(a) a substantially rectangular, hollow first housing secured to ground and having a transparent surface at the top thereof;

(b) a substantially rectangular second housing supported on ground and isolated within the interior of said first housing, said second housing having an upper surface horizontally aligned subjacent said transparent surface;

(c) a dam deployed to synchronously translate over at least a portion of said upper surface;

(d) manually articulated coin-dispensing means pivotally extending through at least one lateral surface of said first housing for controllably guiding the passage of said coins to said upper surface;

(e) coin receiving means formed on at least one lateral surface of said second housing for collecting such coins as are pushed over an edge of said upper surface by said dam and for producing sensing signals indicative thereof;

(f) dispensing means mounted on said first housing and connected to receive said sensing signals for dispensing a number of tokens or tickets corresponding to the number of coins sensed; and

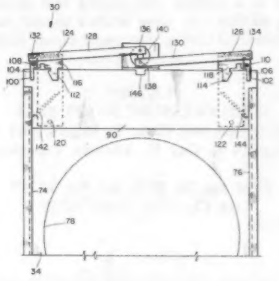
(g) surface interruption means secured to said upper surface whereby to cause substantially uni-directional movement of accumulated coins thereon.

4,272,083

VIDEO DISC PLAYER HAVING RECORD EXTRACTING MECHANISM

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,601
Int. Cl.³ G11B *25/04, 17/04*
U.S. Cl. 369—77 **7 Claims**



1. A player for recovering prerecorded signals from a disc record removably subject to occupancy of a protective cover comprising a jacket and a record retaining spine removably located therein; said spine being provided with a latch member for releasably securing said spine to said jacket; said player comprising:

(A) a housing having an input slot into which an occupied cover is inserted along a path for loading a record therein;

(B) a turntable rotatably mounted in said housing;

(C) a guide disposed in said housing;

(D) a latch defeat member movably-mounted in said housing and subject to deflection away from a starting position; said latch defeat member being located along said cover insertion path when occupying said starting position thereof such that it is wedged between said spine latch member and an interior portion of said jacket during an occupied cover arrival at a fully inserted position in said player so that said spine latch member is deflected in a manner freeing said spine from said jacket;

(E) a spine gripper member movably-mounted in said housing and subject to deflection away from a beginning position; said spine gripper member being subject to engagement with said spine during an occupied cover arrival at said fully inserted position for releasably securing said spine to said housing, whereby said spine, being freed from said jacket and secured to said housing, is removed from said jacket and retained in said player resting on said guide along with an associated record during a jacket withdrawal subsequent to an occupied cover arrival at said fully inserted position;

wherein said engagement of said spine gripper member with said spine effects a displacement of said spine gripper member away from said beginning position thereof;

(F) means responsive to said displacement of said spine gripper member for deflecting said latch defeat member away from said starting position thereof to a deflected position when said latch defeat member is released from the engagement with said interior portion of said jacket during said jacket withdrawal, whereby said spine latch member is freed from interference by said latch defeat member;

(G) means for transferring said retained record from said guide to said turntable for playback; said transferring means also serving to transfer said retained record from said turntable to said guide for record retrieval;

wherein an empty jacket is inserted into said input slot along said path for retrieving said retained record resting on said guide; wherein said spine latch member, having been freed from interference by said latch defeat member, serves to latch said spine to said jacket upon arrival of said jacket at said fully inserted position; wherein the location of said deflected latch defeat member is such that said empty jacket engages said latch defeat member to cause further deflection thereof during arrival of said empty jacket at said fully inserted position; and

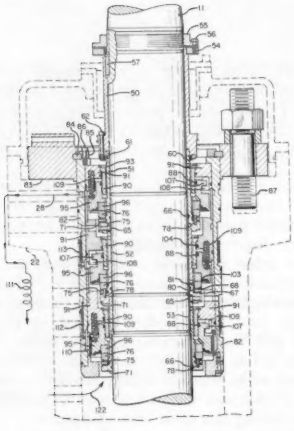
(H) means responsive to said further deflection of said latch defeat member for effecting motion of said spine gripper member in a manner disengaging said spine from said housing so that said spine latched to said jacket effects record retrieval during subsequent cover withdrawal.

4,272,084

HIGH PRESSURE SHAFT SEAL

Arthur R. Martinson, and Victor D. Rogers, both of Portland, Oreg., assignors to Guy F. Atkinson Company, Portland, Oreg.

Filed Apr. 30, 1979, Ser. No. 34,397
Int. Cl.³ F16J *15/54, 15/56*
U.S. Cl. 277—30 **18 Claims**



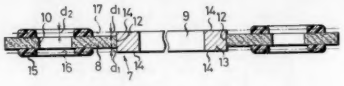
1. A shaft seal comprising a non-rotating seal ring and a rotating seal ring in end face mutual contact in which a support ring is located behind one of said seal rings, face surfaces on said one seal ring and support ring confronting each other, an annular projection on one of said confronting surfaces engaging the opposite confronting surface to support said one seal ring on said support ring, an annular support behind said support ring, face surfaces on said annular support and said support ring confronting each other, and an annular projection on one of said last confronting surfaces engaging the opposite confronting surface to support said support ring on said annular support, said annular projections having diameters causing said support ring to be normally free of any unbalanced forces, said first annular projection being on said one seal ring and said second annular projection being on said annular support.

4,272,085

CYLINDER HEAD GASKET FOR A LIQUID COOLED INTERNAL COMBUSTION ENGINE

Tetsuzo Fujikawa, and Michio Nishimura, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 3, 1979, Ser. No. 81,590
Claims priority, application Japan, Oct. 7, 1978, 53-138482[U]; Oct. 7, 1978, 53-138483[U]; Oct. 7, 1978, 53-138484[U]
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—235 B **7 Claims**



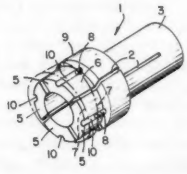
1. A cylinder head gasket to be disposed between a cylinder block and a cylinder head of a liquid cooled internal combustion engine, comprising a gasket body formed with at least one hole for a combustion chamber of the engine and at least one hole for a coolant passage, protruded portions of a metal having a relatively high thermal conductivity, said protruded portions being disposed around a periphery of said hole for the combustion chamber such that they protrude vertically from opposite surfaces of said gasket body and adapted to be in pressure contact with the cylinder block and the cylinder head and at least one seal member of an elastic and liquid impermeable materiai, said seal member fixed to and arranged on opposite surfaces of said gasket body around a periphery of said hole for the coolant passage, said seal member protruding vertically from said opposite surfaces of said gasket body, and the height of said seal member being larger than that of said protruded portion.

4,272,086

ADJUSTABLE TAPER RING COLLAR

Erwin Tryon, 538 Jamaica Ave., Brooklyn, N.Y. 11208

Filed Mar. 28, 1980, Ser. No. 134,755
Int. Cl.³ B23B *31/40*
U.S. Cl. 279—1 S **6 Claims**



1. An adjustable taper ring collar comprising: a generally cylindrical member **(1)** having a plurality of longitudinal slits **(2)** therein;

receiving means **(6)** on said generally cylindrical member **(1)** for receiving a ring, or the like, thereon, the sections **(5)** between said longitudinal slits **(2)** being expandable in the radial direction of said generally cylindrical member to retain said ring or the like on said collar;

at least said receiving means **(6)** having a plurality of longitudinal grooves **(10)** therein and distributed around the periphery thereof, said grooves **(10)** extending to the ring or the like receiving area of said receiving means **(6)**; and

a plurality of elongated abutment means **(8, 18)** adjustably

coupled to said collar and having at least a part of their cross sections located in respective ones of said longitudinal grooves (**10**) at least in the vicinity of said receiving means (**6**) and being movable in the longitudinal direction of said collar for abutting against a side surface of said ring or the like at a plurality of spaced apart locations around the circumference of said ring or the like, said longitudinal grooves providing bearing surfaces for substantially preventing circumferentially directed movement of said abutment means (**8,18**) relative to said collar.

4,272,087

NONLOOSENING DRILL CHUCK

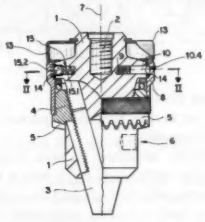
Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,345

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2847927

Int. Cl.[3] **B23B** *31/12*

U.S. Cl. 279—62 **8 Claims**



1. A chuck comprising:

a chuck body rotatable about a chuck axis;

a plurality of jaws radially displaceable on said chuck body;

a tightening body rotatable about said axis on said chuck body;

means including interengaging formations on said tightening body and on said jaws for displacing said jaws radially inwardly on rotation of said tightening body relative to said chuck body in a tightening direction and for displacing said jaws radially outwardly on rotation of said tightening body relative to said chuck body in an opposite loosening direction;

an array of radially directed teeth formed on one of said bodies and centered on said axis, each tooth having relative to said loosening direction a front flank and a rear flank;

a latching pin displaceable chordally in the other of said bodies and having a side surface and an outer end surface together forming an edge;

biasing means between said pin and said other of said bodies for urging said pin chordally forwardly into engagement with said teeth with said edge fitting between two adjacent teeth and said side end surface engaging one of said front flanks and said surface engaging the back flank of the tooth immediately trailing said one front flank in said loosening direction; and

means including an unlocking element on said chuck body for displacing said pin against said biasing means chordally backwardly out of engagement with said teeth.

4,272,088

MECHANICAL CONCENTRIC SUPPORT

Fred Perry, 1340 Cedar St., Berkeley, Calif. 94702

Filed Jun. 8, 1979, Ser. No. 46,644

Int. Cl.[3] **B23B** *5/22*

U.S. Cl. 279—114 **1 Claim**

1. A mechanical concentric support device for a workpiece, comprising:

a generally circular-cylindric housing adapted for support axially of said housing on a machine tool and having first and second circular faces,

support shafts radially slideably borne by said housing adjacent to said first circular face of said housing,

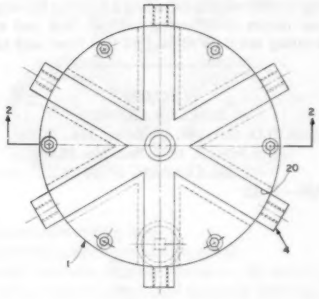
a scroll mechanism contained within said housing and engaged with each of said support shafts to cause radial motion of said support shafts upon rotation of said scroll mechanism about the axis of said housing,

drive means borne by said housing and said scroll mechanism for causing relative rotation of said scroll mechanism with respect to said housing about the axis of said housing, said drive means comprising

a connector for transmitting motion from outside said housing to said scroll mechanism, said connector being located on one of the circular faces of said housing,

a ring spur gear mounted on said scroll mechanism concentric to the axis of said scroll mechanism and said housing,

a driving spur gear engaged with said ring spur gear, and



a shaft journalled through one of the circular faces of said housing parallel with and offset from the axis thereof, and adjacent to the cylindric surface of said housing, said driving spur gear being axially mounted on said shaft internally of said housing and said connector being formed as the end of said shaft opposite said driving spur gear, for engagement by an appropriate tool mating with said connector to rotate said scroll mechanism with respect to said housing, and

adapters threadably engageable with the radially outermost portion of said support shafts and extending radially parallel with the elongate dimension of said support shafts, said first circular face of said housing being formed with radially extending guide slots in the interior surface thereof for limiting said support shafts to radial sliding motion, the exterior surface of said first circular face being formed with radially extending dovetail ways parallel to said guide slots and axially offset therefrom, said adapters being formed with dovetail portions extending along the elongate dimension thereof for mating with said dovetail ways to constrain said adapters to radial sliding motion.

4,272,089

TRACTOR-TRAILER LAND VEHICLE

Robert G. Watkins, Jr., No. 2 Longview Rd., R.D. #4, Coatesville, Pa. 19320

Continuation of Ser. No. 769,518, Feb. 17, 1977, Pat. No. 4,149,732. This application Apr. 2, 1979, Ser. No. 26,056

The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.

Int. Cl.[3] **B60P** *3/22*

U.S. Cl. 280—5 C **7 Claims**

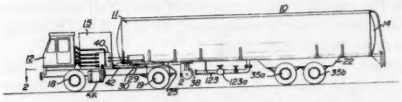
1. A fuel transport land vehicle comprising

a tractor,

a fifth wheel assembly including means mounting said fifth wheel means to said tractor,

a trailer for carrying jet fuel for engaging said fifth wheel assembly,

means during normal operation of said vehicle for solely preventing any relative pivotal movement between said trailer with respect to said fifth wheel assembly thereby preventing sideways pivoting between trailer and tractor



but allowing said tractor to be easily removed from said trailer for maintenance and repair, said fifth wheel assembly mounting means including pivoting means for providing normal up and down movement between tractor and trailer during normal operation of said vehicle, and

said trailer having a tank for carrying said jet fuel and

pumping module means including a housing having disposed therein means for filtering said jet fuel and means for modulating the flow of said jet fuel from said tank.

4,272,090

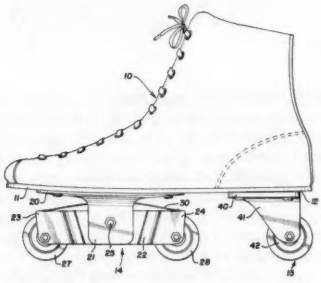
ROLLER SKATE

Ira N. Wheat, P.O. Box 145, Quitman, Tex. 75784

Filed Mar. 9, 1979, Ser. No. 18,998

Int. Cl.[3] A63C *17/04*

U.S. Cl. 280—11.22 **1 Claim**



1. A roller skate comprising

a shoe having a sole portion and a heel portion; a front wheel assembly mounted at said sole portion; and a rear wheel assembly mounted at said heel portion;

said front wheel assembly comprising: a base plate attached to said sole portion having means defining a fixed pivot bearing underlying said sole portion; an elongated bogie, having means defining a fixed pivot bearing intermediate its ends for coacting attachment to said plate pivot bearing; and leading and trailing wheels rotatably mounted at the opposite ends of said bogie, and disposed beneath said sole portion;

spring means coupled between said front wheel assembly base plate and said bogie, for establishing a normal rotative position of said bogie relative to said base plate when the wheels are lifted from the skating surface; said spring means comprising an elongated spring leaf secured rigidly to said base plate intermediate its ends, and having its opposite ends bearing on said bogie adjacent to the respective opposite ends thereof;

said rear wheel assembly comprising: a base plate attached to said heel portion having means defining a wheel mount underlying said heel portion; and a rear wheel rotatably mounted in said wheel mount;

said leading, trailing, and rear wheels being aligned in a single row about parallel axis of rotation.

4,272,091

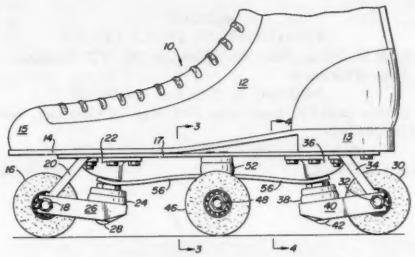
ROLLER SKATE

Thomas J. Reid, Jr., 506 Morley Pl., Elmira, N.Y. 14904

Filed May 9, 1979, Ser. No. 37,254

Int. Cl.[3] A63C *17/04*

U.S. Cl. 280—11.28 **10 Claims**



1. A roller skate comprising:

(a) a shoe for receiving therein a person's foot, said shoe having a bottom sole,

(b) a frame fixedly attached to said bottom sole, a front wheel rotatably supported by a brace means depending from said frame adjacent to and beneath the toe of said shoe, a rear wheel rotatably supported by a brace means depending from said frame adjacent to and beneath the heel of said shoe,

(c) a pair of center wheels rotatably supported on a common axis by a brace depending from said frame at a central location on said frame so that said common axis is substantially equidistant from the axes of rotation of said front and rear wheels, all of said wheels being of the same size and at the same elevation for simultaneous rolling contact with a support surface, said front and rear wheels being aligned with one another so as to be rotatable at a location along an imaginary center line of said sole, said center wheels being at opposite sides of said imaginary center line and beneath said sole,

(d) a first shock absorber for said center wheels, a second shock absorber for said front wheel, and a third shock absorber for said rear wheel, means coupling said shock absorbers to said frame, said second shock absorber being rearwardly of the axle for the front wheel, said third shock absorber being forwardly of the axle for the rear wheel, a front fork extending from the front axle to said second shock absorber, a rear fork extending from said third shock absorber to the rear wheel axle.

4,272,092

AGRICULTURAL TRANSPORTER

Gerald T. Johnson, Kulm, N. Dak.

Filed Dec. 26, 1979, Ser. No. 107,447

Int. Cl.[3] B62D *25/00*

U.S. Cl. 280—43.23 **8 Claims**

1. A transporter, for a pair of transversely elongated agricultural implements having first, mutually remote ends and second ends in abutting apposition, said implements including forward support wheels and arrays of pivotally mounted rearward packer wheels, said transporter comprising, in combination:

first and second frames;

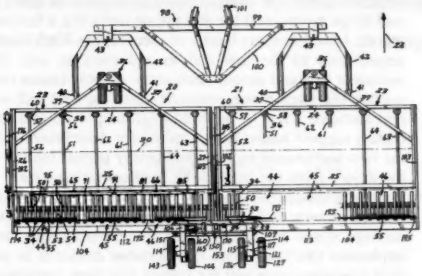
means attaching said frames rigidly to the backs of said implements near the apposed ends thereof to extend between upper and lower ends;

first and second wheel means;

means mounting said wheel means in said frames for linear vertical movement with respect to said lower ends of said frames;

first motor means for displacing said wheel means between first positions, out of contact with the ground behind said implement, and second positions, in which they contact the ground and raise said frames thereabove;

latch means actuable between an inoperative position and an operative position in which increase in the transverse displacement between said upper ends of said frames is prevented;



second motor means for causing operation of said latch means;

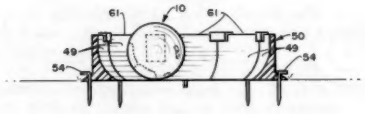
and means for energizing said motor means so as to first cause said wheel means to move into contact with the ground, then cause operation of said latch means, and then raise said frames with respect to the ground so that said packing wheels are out of contact with the ground and said latch means prevents sagging of said mutually remote ends of said implements.

4,272,093

SELF-PROPELLED ROLLING TOY

Dennis Filice, 7381 Doc Adams Rd., Marysville, Calif. 95901, and David G. Bories, 8421 Ascolano Ave., Fair Oaks, Calif. 95628

Filed Sep. 17, 1979, Ser. No. 76,322
Int. Cl.³ A63G *1/12, 29/00*
U.S. Cl. 280—206 **10 Claims**



1. A rolling toy comprising:

a generally spherically shaped hollow shell structure having an interior sufficiently large to accomodate a human being;

an opening leading into the interior of said shell of a size sufficient to allow a human being to pass therethrough;

a seat disposed in the interior of said shell for providing a seat for a human being;

restraining means associated with said seat and said shell for both holding a human being in said seat and restraining movement thereof;

feet retaining means on the interior of said shell for retaining the feet of a human being in a fixed position; and

hand gripping means on the interior of said shell for gripping by the hands of a human being

wherein said seat is disposed against and integral with the inside wall of said hollow shell structure, and which seat is comprised of two sections, an upper back section and a lower seat cushion section, each of which is separately inflatable,

said seat further including a pair of harnesses, one on the left and one on the right side therof, through which an occupant's left and right arms may be respectively inserted.

9. In the toy of claim 1 including a confining area encircling said shell, said confining area having a single continuous curved wall curving from a point inwardly of said area upwardly and outwardly of the interior of said area

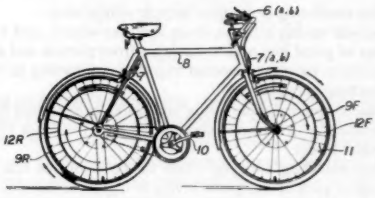
whereby said shell can travel omnidirectionally within said confined area.

4,272,094

POWERCYCLE

Raymond A. Patrin, 34-32 75th St., Queens New York, N.Y. 11372

Filed Jun. 14, 1979, Ser. No. 48,419
Int. Cl.³ B62M *1/10*
U.S. Cl. 280—217 **15 Claims**



1. A powercycle comprising

a vehicle wheel having wheel supports,

a flywheel rotatably mounted between the wheel supports inside the vehicle wheel, said flywheel defining sides,

clutch means for releasably connecting and disconnecting, selectively, said flywheel to and from said vehicle wheel, said flywheel being rotatable relative to said vehicle wheel, said clutch means is disposed within the confines of said sides

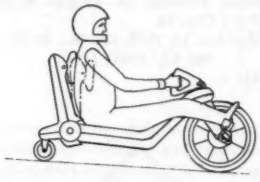
whereby balance is promoted.

4,272,095

CHILD'S WHEELED RIDING TOY

George W. Ptaszek, Elm St., P.O. Box 260, Pascoag, R.I. 02859

Filed Apr. 12, 1978, Ser. No. 895,663
Int. Cl.³ B60B *33/04*
U.S. Cl. 280—220 **7 Claims**



1. A three wheeled vehicle comprising a frame, a front wheel, first means supporting the front wheel for steering movement from said frame, a pair of castered rear wheels each having a swivel axis and a rotational axis, second means supporting said rear wheels from said frame, said second means permitting rocking of the swivel axis of said rear wheels from a tracking position wherein the swivel axis is at an acute angle with a vertical line normal to the ground to a nontracking position wherein said swivel axis is substantially normal to the ground whereby the vehicle may spin about the ground engagement point of the front wheel in said nontracking position.

4,272,096

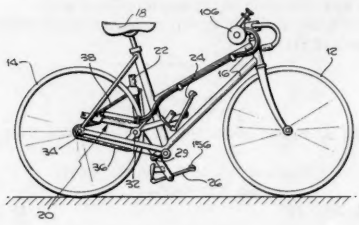
POWERFUL OSCILLATING PEDAL BICYCLE

Boris Efros, Los Angeles, Calif., assignor to Energenic Propulsions, Ltd., Encino, Calif.

Filed Feb. 21, 1978, Ser. No. 879,220

Int. Cl.³ B62M *1/04*

U.S. Cl. 280—255 **14 Claims**



1. An oscillating pedal type bicycle comprising:

a bicycle having a frame, front and rear wheels, and a seat;

a pair of pedal levers each having a front portion and a rear portion, rigidly connected together and having an intermediate pivot point;

means for pivotally mounting said pedal lever on said frame;

individual pedal means mounted toward the front of said pedal levers;

means including a bicycle chain for coupling the rear portion of each of said pedal levers to drive the rear wheel of said bicycle;

means for shifting the speed ratio of said bicycle by changing the effective connection point of said driving means along the length of said rearwardly extending portions of said pedal levers, said speed changing means including mechanical slider means mounted for movement along each of said rearwardly extending portions of said pedal levers, means including recesses in said pedal levers for securely and firmly locking said mechanical slider means in place and for unlocking them, said locking and unlocking means including separate mechanical means independent of said chain means for exerting force between said slider means and said rear portions of said pedal levers, and means for remotely unlocking said mechanical means and shifting their positions to change speed ratios.

4,272,097

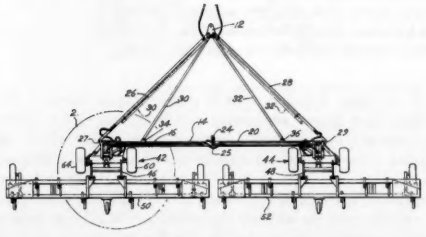
DRAWBAR FOR MOUNTING MULTIPLE FARM IMPLEMENT TOOL BARS

Erwin D. Cornelius, Towanda, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed Jun. 12, 1979, Ser. No. 47,881

Int. Cl.³ B60D *1/14*

U.S. Cl. 280—411 A **5 Claims**



5. A drawbar device for coupling a plurality of farm implement tool bars to a towing vehicle, said drawbar device being convertible between a field operating state and a road operating state and comprising, in combination:

(a) hitch means for securing said drawbar device to said vehicle;

(b) a collapsible crossbar having at least a first section and second section, said first and second sections being hingedly connected to form a substantially linear support span substantially transverse to the direction of vehicle travel in said field operating state and foldable with said first and second sections substantially parallel to the direction of vehicle travel in the road operating state;

(c) bracket means for attaching said collapsible crossbar to said hinge means, said bracket means including a first and second lateral support beams connecting the hitch means respectively to the first and second sections, and also including first and second secondary support beams connecting the hitch means respectively to the first and second sections, when in the field operating state, said secondary support beams having means for detachment from the first and second sections to thereby permit folding of the device from the field to the road operating state;

(d) carriage means for attaching said plurality of separate farm implement tool bars to said collapsible crossbar, said carriage means including means for lowering said farm implement tool bars when said drawbar device is in said field operating state and for raising said farm implement tool bars when said drawbar device is in said road operating state; and

(e) running gear having a frame connected to said collapsible crossbar, a first wheel, a second wheel, and pivotal mounting means for attaching each of said first and second wheels to said frame and for maintaining said wheels in a side-by-side relation when said drawbar device is in said field operating state and in tandem with each other when said drawbar device in said road operation state.

4,272,098

WEIGHT TRANSFER HITCH

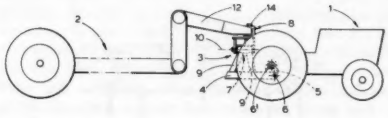
Robert J. Greatbatch, Spalding, England, assignor to Weight Distribution Limited, Hong Hong, Hong Kong

Filed Aug. 7, 1978, Ser. No. 931,365

Claims priority, application United Kingdom, Aug. 12, 1977, 33960/77

Int. Cl.³ B60D *7/00*

U.S. Cl. 280—494 **14 Claims**



1. A weight transfer hitch for connecting an agricultural tractor having a rear axle to a trailer having a coupling member, said hitch comprising:

a pair of parallel linkage arms adapted to be pivotably attached to said tractor about a transverse horizontal axis positioned below and forwardly of said rear axle, said arms having free ends extending rearwardly beyond said axle;

a horizontal pivot bearing having an outer sleeve and an inner pin pivotally mounted within said sleeve;

means for supporting said horizontal pivot bearing above said linkage arms, said supporting means including two pairs of obliquely inclined convergent struts, the lower, wider spaced ends of the struts of each pair being fixed to a respective one of said arms, and the upper, convergent ends of the struts of each pair being fixed to said sleeve;

a vertical pivot bearing having a first member adapted to be fixedly connected to said coupling member and a second

member pivotally movable relative to said first member; and

means for fixedly connecting said second member to said inner pin.

4,272,099

SKI BRAKE

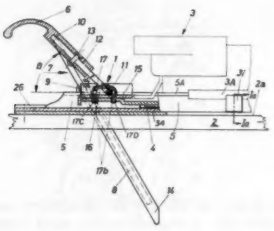
Josef Svoboda, Schwechat; Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Apr. 13, 1978, Ser. No. 896,216

Claims priority, application Austria, Apr. 18, 1977, 2678/77

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **21 Claims**



1. A support structure for mounting a ski brake on a ski adjacent to a safety ski binding means also mounted on said ski, comprising:

guide rail means secured to said ski and extending coextensively therewith, said safety ski binding means being mounted on said guide rail means and having an elongated detent bar separate from said guide rail means extending forwardly therefrom;

a mounting plate having axle receiving means thereon, said axle receiving means including second means for effecting a securement of said mounting plate to the forward end of said detent bar; and

spring wire ski brake means having axle segments received in said axle receiving means, including said second means on said mounting plate for pivotally supporting said ski brake for movement between an operative position and an inoperative position thereof.

4,272,100

COLLAPSIBLE BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

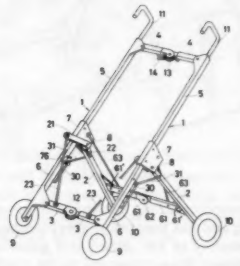
Filed May 29, 1979, Ser. No. 43,337

Claims priority, application Japan, Aug. 29, 1978, 53/106756; Dec. 15, 1978, 53/155284; Dec. 16, 1978, 53/155537

Int. Cl.³ B62B 7/02

U.S. Cl. 280—650 **48 Claims**

1. A collapsible baby carriage, comprising a pair of main rods **(1)**, each main rod having an upper handle end and a lower end, auxiliary rods **(2)**, each auxiliary rod having a pivot end and a free end, pivot means **(7)** operatively securing said pivot ends of said auxiliary rods to the respective main rod **(1)** intermediate the ends of the main rods, first wheel means operatively secured to said lower ends of the main rods, second wheel means operatively secured to the free ends of the respective auxiliary rods, first, second, and third cross-connecting means **(4, 3, 61)**, first journal means **(4')** securing the first cross-connecting means **(4)** to said upper handle ends of said main rods, second journal means **(3')** securing the second cross-connecting means **(3)** to the lower ends of said main rods, third journal means **(61')** securing said third cross-connecting means **(61)** to the auxiliary rods, each of said cross-connecting means **(4, 3, 61)** comprising a respective hinge means **(13, 12, 62)** for folding the cross-connecting means **(4, 3, 61)**, each of said hinge means **(13, 12, 62)** having a respective hinging axis all of which hinging axes are located in a common plane, first lever means **(16, 20)** and first linkage means **(18)** operatively interconnecting said first and second cross-connecting means **(4, 3)** for movement in unison in response to a folding operation of one of said first or second cross-connecting means, second lever means **(21)** and second linkage means **(23)** operatively interconnecting one of said cross-connecting means and said auxiliary rods whereby a folding operation of said cross-connecting means tilts said auxiliary rods toward said main rods so that said first and second wheel means come to be positioned adjacent to one another, third linkage means **(63)** operatively connected to said third cross-connecting means **(61)** for folding the third cross-connecting means **(61)** in response to tilting of said auxiliary rods **(2)** relative to said main rods **(1)**, whereby all three cross-connecting means **(4, 3, 61)** are folded or unfolded substantially simultaneously with the tilting of the auxiliary rods **(2)**, and hammock means **(83)** operatively disposed between said main rods for holding a baby.



4,272,101

SUSPENSION OF A GROUP OF VEHICLE WHEELS

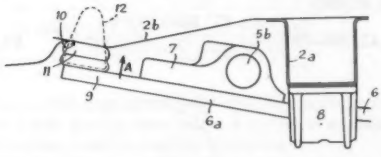
Andre F. Chambon, Palaiseau, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of France

Filed Jul. 20, 1979, Ser. No. 59,454

Claims priority, application France, Jul. 25, 1978, 78 21974

Int. Cl.³ B60G 11/38

U.S. Cl. 280—692 **4 Claims**



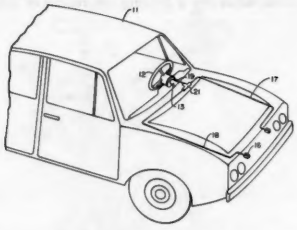
1. An improvement in the suspension of a group of vehicle wheels comprising two wheels located respectively outside at least two longitudinal panels belonging to the structure of the vehicle, two suspension devices, each being constituted by at least one torsion bar substantially parallel to said panels connected at one of its ends to the corresponding wheel, and a transverse elastic member substantially perpendicular to said panels and anchored at the other end of each of the said torsion bars outside said panels, wherein each end of said elastic members extends beyond its anchorage to the corresponding torsion bar with respect to said panel in an end part extending opposite an element fast with said structure and there is disposed between said element and said end part an elastically deformable stop tending to restrain their relative approach beyond a determined load threshold of the vehicle.

4,272,102

COUPLING DEVICE FOR IGNITIVE REACTIONS

Frank B. Burkdoll, Fairfield, Calif., assignor to Explosive Technology, Inc., Fairfield, Calif.

Filed Aug. 7, 1978, Ser. No. 931,601
Int. Cl.[3] B60R *21/02*; F42C *19/00*
U.S. Cl. 280—731 10 Claims



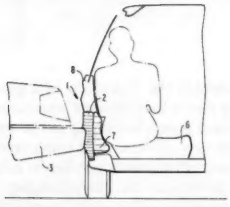
6. In an automotive airbag system having a steering wheel mounted airbag and gas generator, a pyrotechnic crash detector located remotely of the airbag and generator, and pyrotechnic transmission lines connected to the crash detector and gas generator, the improvement comprising: a first body member mounted on the steering column, a second body member affixed to the steering wheel for rotation relative to the first body member, a pyrotechnic transmission channel extending along a generally circular path disposed coaxially of the steering wheel in one of the body members, and means for connecting the transmission lines to the body members in position for communication with the transmission channel in the one body member, said transmission channel containing an exothermal material which is ignited by an ignitive reaction in one of the transmission lines, and a gas channel adjacent to the ignitive material for propagating the reaction to the other transmission line.

4,272,103

LATERAL PROTECTION OF MOTOR VEHICLES

Walter Schmid, Sindelfingen; Werner Breitschwerdt, Stuttgart; Guntram Huber, Aidlingen-Dachtel, and Willi Reidelbach, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 909,070
Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2724017
Int. Cl.[3] B60R *21/04*
U.S. Cl. 280—751 8 Claims



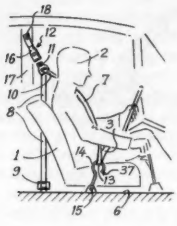
1. A flank protection for protection of passengers from impacts at lateral areas of motor vehicles comprising a vehicle body side wall having a window, and inner and outer body parts on opposite sides of a plane in which said window is located, wherein reinforcement means effecting lateral impact penetration protection by other vehicles are limited to lower areas of said side wall extending downwardly from a belt line of the vehicle and are comprised by one of said outer body parts and resilient portions of said inner and outer body parts above said belt line together form an area that is yieldable for the absorption of outwardly directed reaction forces applied by an occupant against said body parts above said belt line.

4,272,104

VEHICLE PROVIDED WITH AN INERTIA REEL SEAT BELT

Henri E. E. M. Cuny, 14 rue Charles Floquet, 75007 Paris, France

Filed Mar. 20, 1978, Ser. No. 887,957
Claims priority, application France, Apr. 25, 1977, 77 12396
Int. Cl.[3] B60R *21/02*
U.S. Cl. 280—801 10 Claims



1. In a vehicle including an internal platform area having a seat mounted on the platform adjacent an entry/exit opening of the vehicle, the improved seat belt system comprising:

(a) a first belt fastener mounted to the platform on the vehicle opening side of the seat;

(b) a second belt fastener mounted to the platform on the vehicle opening side of the seat;

(c) a hook member including a downward facing hook portion mounted to the platform on the side of the seat opposite the vehicle opening; and,

(d) a seat belt assembly including a seat belt connected on one end to said first belt fastener and connected on the opposite end to said second belt fastener, said seat belt being of sufficient length to pass from said first belt fastener across the seat with an occupant therein, around said hook portion of said hook member, and back across the seat and occupant to said second belt fastener, said seat belt further being of such length that normal deployment and removal of said belt can be accomplished by engaging and disengaging said belt from said hook portion of said hook member, said seat belt assembly further including means disposed adjacent the vehicle opening for releasing the seat belt an amount sufficient to allow the occupant to exit the vehicle through the vehicle opening in an emergency without disengaging said belt from said hook portion of said hook member.

4,272,105

PASSIVE SEAT BELT SYSTEM

Thomas C. Holka, Farmington Hills, and Brian D. Marvin, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 26, 1979, Ser. No. 97,251
Int. Cl.[3] B60R *21/02*
U.S. Cl. 280—804 5 Claims

1. A passive seat belt system having a torso belt, one end of which is fixedly anchored to a vehicle body roof rail rearwardly of the outboard side of a vehicle occupant seating position and the other end of which is connected to a seat belt retractor mechanism on the inboard side of the seating position,

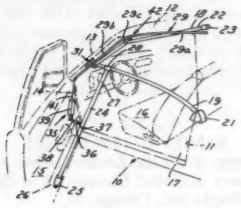
a trolley means movable in response to door opening and closing movement along a track means,

belt engageable means on the trolley means engageable with the belt intermediate the ends of the latter,

the track means having a portion paralleling the roof rail from the fixedly anchored end of the belt forwardly to a point at which the track means turns downwardly to parallel a vehicle windshield pillar located forwardly of the outboard side of the seating position,

the trolley means during forward movement along the track means in response to door opening movement causing the torso belt to be lifted upwardly and forwardly of the seating position to provide egress or ingress to the latter,

belt hanger means comprising a catch depending from the



track means contiguous to a point at which the track means departs from its parallelism to the roof rail and turns downwardly along the windshield pillar,

and hanger engaging means carried on the torso belt constructed and arranged to engage the hanger means to maintain a segment of the torso belt between its roof rail anchored end and the hanger means in substantially parallel relationship to the roof rail as the trolley means travels along the track means adjacent the windshield pillar,

the hanger engaging means comprising a flip hook attached to the torso belt,

the flip hook engaging the catch as the trolley means passes in belt lifting direction of movement.

4,272,106

COPY SHEET

Bertrand Y. Auger, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 10, 1979, Ser. No. 83,385

Int. Cl.[3] **B41L** *1/20;* **B32B** *27/20;* **B41M** *5/16, 5/18*

U.S. Cl. 282—27.5 **10 Claims**

1. A copy sheet comprising

(a) a substantially transparent, heat resistant, polymeric carrier film having means for providing black-line images when used with a master sheet under imaging conditions, and

(b) a substantially transparent, colored dye layer covering at least a portion of one major surface of said carrier film, said dye layer containing at least one dye capable of undergoing a color shift to become lighter in response to the application of a color developer composition.

8. An imaging system comprising the copy sheet of claim **1** and a color developer composition in a transfer means.

4,272,107

TIDE TIME INDICATOR

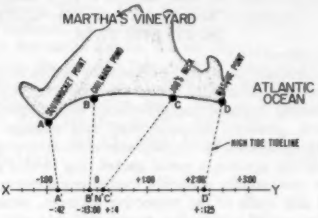
William T. Elbow, South Rd., Chilmark, Mass. 02535

Filed Aug. 2, 1979, Ser. No. 63,337

Int. Cl.[3] **B42D** *15/00;* **G09B** *29/00*

U.S. Cl. 283—1 A **9 Claims**

1. A device for indicating the time of a tide at any or at least one of a plurality of locations having a known tidal time relationship to one another, the device comprising a pair of cooperative charts including a first time-based chart having spaced index marks representing the respective locations, the distance between a pair of the marks being representative of the tidal time difference, to a particular scale, between the locations which the marks represent; and a second timebased chart having index marks representing real time and spaced apart to the same scale as the index marks on said first chart, whereby by positioning an index mark on the second chart representing



the known time of a tide at one of said locations in register with an index mark on said first chart representing said one location, the time of the tide at another of said locations can be read off from said second chart adjacent an index mark on said first chart representing said another location.

4,272,108

SWIVEL FOR HIGH-PRESSURE CONDUIT-CLEANING ASSEMBLY

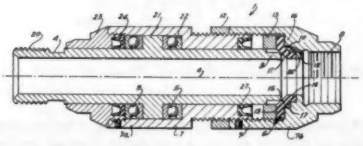
Wolfgang Maasberg, Duisburg, Fed. Rep. of Germany, assignor to WOMA Apparatebau Wolfgang Maasberg & Co. GmbH, Duisburg, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,121

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 7821972[U]

Int. Cl.[3] **F16L** *27/00*

U.S. Cl. 285—95 **10 Claims**



1. In a conduit-cleaning assembly wherein a high-pressure hose has a hose portion connected to a portion of a conduit-cleaning nozzle, a swivel coupling comprising:

an outer end tube connected to one of said portions;

an intermediate outer tube threaded with said outer end tube;

an inner tube connected to the other of said portions and forming with said outer tubes an axis-defining passage for liquid flow between said portions, said inner tube being at least partially received in said outer tubes and having an inner-tube end in said outer tubes;

a bearing between said inner tube and said intermediate outer tube for relative rotation about said axis therebetween; and

an annular seal engaged between said inner-tube end and said outer end tube and having a pair of generally axially opposite pressure-equalizing surfaces one of which engages said inner-tube end generally axially and both of which are exposed to the pressure in said passage.

4,272,109
RING GASKET RETAINER FOR FLANGED CONNECTORS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco, Inc., Ventura, Calif.

Continuation of Ser. No. 804,726, Jun. 8, 1977, abandoned. This application May 29, 1979, Ser. No. 43,335

Int. Cl.[3] **F16L** *17/06*

U.S. Cl. 285—336 **19 Claims**

1. In a connector: a pair of connector bodies having a fluid passage therein when said bodies are connected together, said bodies having opposed radial surfaces with circumferentially continuous grooves circumscribing said passage and each groove being defined by opposed side walls diverging from the bottom of the groove, a metal gasket ring in said grooves in sealingly and radially inwardly loaded engagement with said opposed side walls of the respective grooves, retainer means carried by one of said bodies, means shiftable relative to said gasket ring and said one of said bodies for connecting said retainer means to said gasket ring and initially holding said gasket ring in position with respect to the groove in one of said bodies to be clamped between said bodies with said side walls loaded axially and circumferentially against said gasket ring, and means clamping said bodies together, said means connecting said retainer means to said gasket being flexible and capable of flexing with respect to said gasket ring and said one of said bodies for enabling movement of said gasket ring during loading thereof.

4,272,110
VIBRATORY SANDER

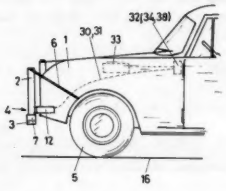
Franz Cervinka, Oberleitenweg Nr. 35, A-6370 Kitzbühel, Austria

Filed Jun. 27, 1978, Ser. No. 919,545

Claims priority, application Austria, Jun. 28, 1977, 4602/77

Int. Cl.[3] **B60B** *39/06, 39/10;* **B61C** *15/10*

U.S. Cl. 291—23 **10 Claims**



1. A sanding device for wheeled motor vehicles comprising, a source of electric power, a vibratable channel having a bottom, at least one refillable sand reservoir having a funnel-shaped bottom with a discharge opening being disposed above said vibrating channel, means for vibrating said channel operatively connected to said source of electric power and conveying the sand to a channel opening in said bottom in alignment with and in front of the wheel of the motor vehicle, said channel opening being disposed at an end of said channel directed towards the wheel, a flap arranged to close said channel opening to control the flow of the same therethrough, and said bottom being substantially planar disposed at a slightly upwardly inclined angle relative to a horizontal plane and having grooves longitudinally communicating with said channel opening, and said channel being transversely disposed with respect to the direction of movement of the vehicle and the end of said bottom on the side of the wheel having a diagonal side so that said channel opening has a triangular cross-sectional area dimensioned to pass sand in a predetermined spreading width.

2. A sanding device for selectively discharging sand in front of a wheeled motor vehicle comprising:

a source of electric power, a reservoir container for storing and delivering sand, said reservoir container being formed with a vertically disposed funnel-shaped bottom member having a triangularly shaped delivery opening for delivering the sand and with a top having an inlet opening for receiving the sand, a trough underlying said delivery opening having a substantially plane bottom member to provide sand over the entire surface of said bottom member and said bottom member having a discharge opening dimensioned for discharging a predetermined width of sand in front of the wheel, electric means operatively connected to said source of electric power for vibrating said trough thereby conveying sand along said bottom member from said reservoir container to said discharge opening, a flap member pivotally disposed within said trough for controlling the flow of the sand therethrough said discharge opening, said substantially plane bottom of said trough includes a plurality of longitudinally extending grooves communicating with said discharge opening.

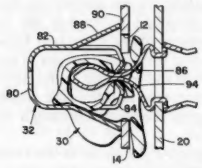
4,272,111
SAFETY LATCH DEVICE

Victor S. Hammer, Jr., Lake Zurich; Arthur J. Danko, Oak Lawn, and Perry J. Heard, Chicago, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 26, 1979, Ser. No. 23,819

Int. Cl.[3] **E05C** *19/06*

U.S. Cl. 292—17 **12 Claims**



1. A safety anchor latch device for accepting a metallic latch strike adapted for use in a supporting structure such as an apertured metallic cabinet and closure therefore with said latch being designed for use at a predetermined maximum operating temperature, including a self retained plastic latch, said latch fabricated of a plastic material having the characteristic of melting at a predetermined temperature, a metallic resilient spring member having positive position retaining means and positive strike gripping means which at normal operating temperatures are inoperative and supported by elements of said plastic latch in spaced relation to said supporting structure and the metallic latch strike respectively but which positively engage and retain same when the structural integrity of said plastic latch is destroyed by abnormally elevated temperatures in excess of said predetermined temperature, whereby said supporting structure is maintained in a closed position and migration because of the elevated temperature is prevented.

4,272,112
ELECTRIC DOOR LOCK FOR MOTOR VEHICLES

Horst Schlick, Schwalbach; Karl Rau, Mühlheim; Alfred Wipfler, Kriftel, and Joachim Lueg-Althoff, Hofheim, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,308

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825355

Int. Cl.[3] **E05C** *13/04*

U.S. Cl. 292—201 **14 Claims**

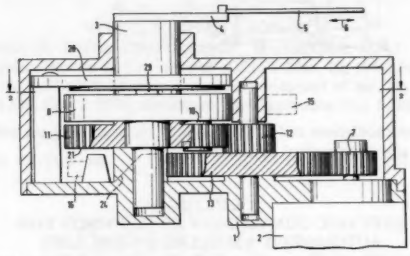
1. Apparatus for electrically locking and unlocking doors of a motor vehicle, comprising:

a motor mounted in one door of the vehicle;

a lock mechanism in the door for locking the door;

a connecting element coupling the motor with the lock mechanism;

switch means connected with the motor and the lock mechanism for controlling locking and unlocking functions of the motor in response to movement of the connecting element, said switch means including a first switch coupled with the motor to be actuated by operation of the motor, and a second switch coupled with the lock mechanism via the connecting element to be actuated by movement of the connecting element;



motion transmitting means connected between the motor and connecting element and constructed to reverse the direction of movement of the connecting element in dependence on the movement completed by the motor; and

said switch means, motion transmitting means and motor being arranged in a structural unit.

4,272,113

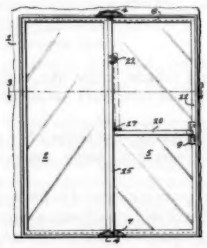
SLIDING DOOR SAFETY BAR

Raymond V. Zins, 228 Crestridge Ave., Colorado Springs, Colo. 80906

Filed Aug. 13, 1979, Ser. No. 66,040

Int. Cl.³ E05C *17/12*

U.S. Cl. 292—262 **2 Claims**



1. A supplemental locking device for relatively sliding parallel door panels mounted in a door frame having parallel top and bottom members, comprising:

a fixed door panel;

a slidable door panel having a frame movable in a plane parallel to the plane of the fixed panel and into juxtaposition therewith;

a rigid mounting post vertically disposed between the said top and bottom frame members and perpendicular thereto and intermediate the lateral extremities of the said door panels;

means attaching the mounting post to the top and bottom frame members;

hinge means attached to the mounting post intermediate the top and bottom ends thereof; and

a rigid locking bar attached at its one end to the hinge means and adapted to pivot with respect to the mounting post in a plane parallel to the said door panels and adapted to abut its free end against the frame member of the slidable panel to prevent sliding movement thereof.

4,272,114

IMPACT ABSORBING DEVICE

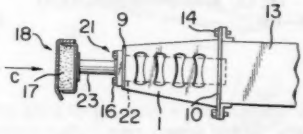
Tomoyuki Hirano, Tokyo; Akira Yamanaka, and Koichi Tonai, both of Yokohama, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 860,626, Dec. 14, 1977, Pat. No. 4,190,276. This application Sep. 17, 1979, Ser. No. 76,151

Claims priority, application Japan, Dec. 22, 1976, 51/15533; Feb. 3, 1977, 52/11265; Jun. 8, 1977, 52/68270

Int. Cl.³ B60R *19/04*

U.S. Cl. 293—133 **11 Claims**



1. An impact absorbing device comprising a hollow polyhedral body, a plurality of elongated cutouts formed in each of the side walls of said polyhedral body, said cutouts extending in parllel relation in a direction substantially orthogonal with respect to the longitudinal axis of said polyhedral body; means for guiding continuous deformation of said polyhedral body in the direction of its longitudinal axis by compression forces, each said cutout having one of its longer edges arranged to protrude outward relative to the other, whereby the energy of impact imparted in the axial direction of said polyhedral body can be absorbed by the deformation or partial breakage of the side walls of said polyhedral body; and

a shock absorber having an impact attenuating capability less than that of said polyhedral body is mounted in said polyhedral body with its axis aligning substantially with the longitudinal axis of said polyhedral body to absorb the energy of less impact than a predetermined magnitude, said polyhedral body absorbing the portion of the energy of impact exceeding the predetermined magnitude.

4,272,115

FREE-MOVING BUMPER FINISHER

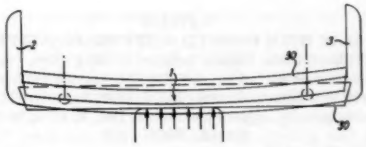
Malcolm G. Stock, Nantwich, England, assignor to Rolls-Royce Motors Limited, Crewe, England

Filed Oct. 31, 1978, Ser. No. 956,044

Claims priority, application United Kingdom, Nov. 10, 1977, 46783/77

Int. Cl.³ B60R *19/04*

U.S. Cl. 293—155 **10 Claims**



1. A bumper arrangement for attachment to a body of a vehicle comprising:

a supporting metal beam extending transversely of the body for receiving a force from an impact;

a decorative finisher carried by said supporting metal beam in superposed relationship thereto; and

means connecting said finisher to said supporting metal beam for bodily movement of the finisher relative to said

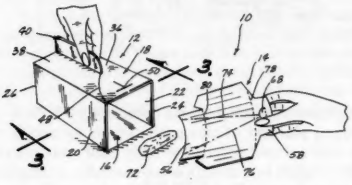
beam in a general direction of the force of impact when applied to the beam, said connecting means comprising at least one bolt extending through said finisher and said beam, said bolt being spring loaded by a spring to urge said beam and finisher together, and at least one of said beam and said finisher at a point through which said bolt extends having a slot to allow relative movement between said finisher and said beam.

4,272,116

APPARATUS AND METHOD OF DISPOSING OF PET WASTE AND THE LIKE

Ralph W. Tufte, Jr., 5820 S. 100 Plz., 3B, Omaha, Nebr. 68127

Filed Nov. 16, 1979, Ser. No. 94,853
Int. Cl.³ A01K *29/00*; A47L *13/52*
U.S. Cl. 294—1 B **11 Claims**



1. A disposable collector for pet waste and the like comprising,

a collapsible generally rectangular container having forward and rearward ends, a bottom wall, top wall and opposite sidewalls foldingly interconnected whereby said container is foldable from a substantially planar collapsed form to a generally tubular open form, and a back wall foldingly connected to one of said walls and adapted to close the rearward end of said container in said open form thereof,

said container further comprising a handle portion formed integrally with one of said walls whereby said container may be supported and manipulated by said handle portion,

a flat spatula adapted for moving waste into said container,

said spatula and container including coacting connector means operative for securing said spatula in substantially closed relation over the forward end of said container, and

said spatula having a pair of laterally directed score lines spaced longitudinally apart by a distance substantially equal to the height of said container at the forward end thereof whereby said spatula may be folded along said score lines to substantially conform to the forward end of said container.

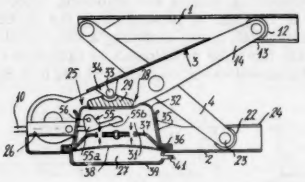
4,272,117

SEAT WITH DAMPED SUSPENSION SYSTEM

Jean Vilbeuf, Paris, France, assignor to Sifra, Gien, France

Continuation-in-part of Ser. No. 790,137, Apr. 22, 1977, Pat. No. 4,148,518. This application Jul. 6, 1978, Ser. No. 922,277
Claims priority, application France, Dec. 8, 1976, 76 36957
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R **26 Claims**

1. A seat, notably for all wheel-mounted or crawler-truck vehicles such as farming tractors, public works equipment, trucks and sundry military vehicles, comprising a sprung suspension mounted on a fixed base frame and supporting a movable seat frame, with resilient return means, wherein said resilient return means comprise a hydropneumatic device associated with an automatic monitoring distributor integrated in said device, adapted to be connected to the pressure-fluid circuit of the vehicle, and for automatically adjusting the pressure in said hydropneumatic device as a function of the seat



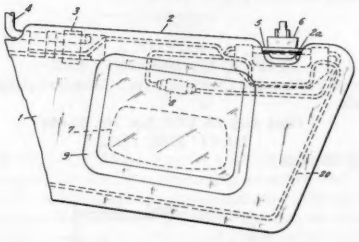
frame oscillations and of the weight of the seat occupant without any prior manual adjustment.

4,272,118

ELECTRIC CONNECTION TO SUN VISOR FOR AUTOMOTIVE VEHICLES, OR THE LIKE

Lothar Viertel, Wuppertal, and Manfred Nowak, Solingen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,406
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2703447
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 R **18 Claims**



1. Sun visor for a vehicle, or the like, comprising:

a sun visor body; said visor body having an upper longitudinal edge;

a light source on said sun visor body; a first current lead wire and a ground wire both being connected to said light source;

an outer support pivot pin located in the region of one end of said upper edge of said visor body; a support for said pivot pin and being located in said visor body for positioning said pivot pin stationary in location; first contact means on said outer pivot pin; said first current lead wire being connected to said first contact means;

an outer support housing, having a longitudinally extending socket means into which said pivot pin is pivotingly, detachably emplaced; second contact means on said support housing for engaging said first contact means when said pivot pin is in said socket means; connection means on said support housing for connecting a second electric wire of a vehicle, or the like, to said second contact means;

a third electric wire; said pivot pin having a longitudinally extending bore therein shaped for receiving and holding therein said third electric wire that is separate from said pivot pin and that extends longitudinally through said bore and is also located wholly within said bore along the length of said pivot pin; a radially extending groove into said pivot pin and communicating from the exterior of said pivot pin to said bore and extending longitudinally along

said pivot pin; said groove being defined by sidewalls in said pivot pin;

said first contact means comprising a contact element held in said groove and extending into said groove to contact said third electric wire therein, and terminating outside said pivot pin for engaging said first contact means in said socket means.

4,272,119

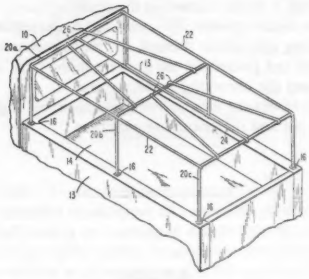
VEHICLE COVER ASSEMBLY

Robert M. Adams, 41241 Orange Pl., Hemet, Calif. 92343

Continuation-in-part of Ser. No. 665,654, Mar. 10, 1976, Pat. No. 4,093,302, which is a continuation-in-part of Ser. No. 654,623, Feb. 2, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,070

Int. Cl.³ B60P 3/34

U.S. Cl. 296—100 **27 Claims**



1. A camper cover adapted for attachment to a vehicle for a cargo area, said camper cover comprising:

(a) a plurality of frame members adapted for mounting on a vehicle to form a camper frame of the cargo area of the vehicle;

(b) a cover member formed of a flexible sheet material having a front edge, a rear edge, and two side edges adapted to fit over the camper frame formed by said frame members to form a camper cover;

(c) means for securing at least said two side edges of said cover member to the sidewalls of the cargo area of the vehicle; and

(d) said means for securing said two side edges including a separable fastener of the hook and loop type having a first part with a plurality of upstanding hook or loop type members extending therefrom and a complementary part having a plurality of complementary upstanding hook or loop type members for interengagement with the upstanding members of said first part, along a plane of interengagement, said first part being disengaged from said complementary part when peeled away to effect pulling of hook and loop type members substantially perpendicularly to the plane of interengagement and said first part resisting disengagement when subjected to forces parallel to the plane of interengagement, said first part being secured to said cover member adjacent said two side edges and said complementary part being secured to said sidewalls of the cargo area for releasable engagement with said first part and said first part of said separable fastener being located relative to the side edges of said cover member for maintaining said cover member in a taut disposition over said frame members whereby said first member is releasably secured to said complementary part by pressing said first part into engagement with said complementary part to effect interengagement of said upstanding members and prevent inadvertent disengagement of said first part and said complementary part.

4,272,120

FLANGED VEHICLE ROOF PANEL WITH AN INWARDLY INDENTED SIDE PART

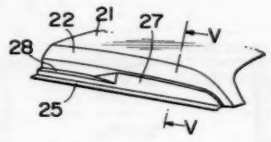
Yoshinori Katayama, Tokyo, and Hiromasa Torii, Koganei, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 6, 1979, Ser. No. 72,926

Claims priority, application Japan, Sep. 16, 1978, 53-127152[U]

Int. Cl.³ B60J 7/10

U.S. Cl. 296—210 **4 Claims**



1. A roof panel for a vehicle which has a rear pillar and a gutter, formed with a main central portion, a narrow side portion extending along a side edge of the central portion at a substantial angle thereto, and a narrow flange portion extending along the entire length of the side edge of the side portion which is mated with a gutter at a substantial angle thereto, wherein a rear part of the side portion is indented towards the center line of the central portion of the panel.

4,272,121

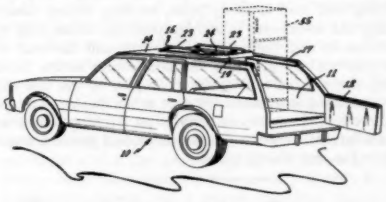
STATION WAGON WITH ADJUSTABLE REAR ROOF PANEL

Sunyong P. Kim, 535 N. Cahuenga Blvd., Los Angeles, Calif. 90004

Continuation of Ser. No. 916,955, Jun. 19, 1978. This application Apr. 14, 1980, Ser. No. 140,195

Int. Cl.³ B60J 7/00

U.S. Cl. 296—216 **4 Claims**



1. In a station wagon vehicle or the like having a roof, a rear cargo space, and a rear door;

the rear portion of said roof provided with a rectangular opening extending rearwardly to form a continuation of the opening provided by the rear door when the latter is opened;

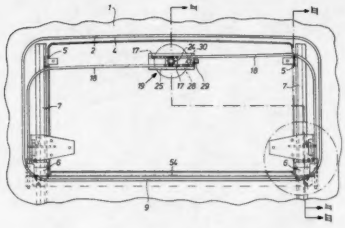
a roof panel covering said rectangular opening, said panel including a downwardly sloping rear portion which engages the upper edge of said rear door when closed; and

support means for said roof panel including guide members pivotally attached to the downwardly sloping rear portion thereof and guideways disposed along the bottom of the front half portion of said roof for slideably receiving said guide members whereby said rear panel can be slid forwardly to lie over the surface of the front half portion of said roof.

4,272,122
VEHICLE BODY MEMBER WITH AN OPENING CLOSABLE BY A COVER

Walter Schätzler, Aufhausen, and Hans Jardin, Inning, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,468
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1978, 2808452
Int. Cl.³ B60J 7/04
U.S. Cl. 296—221 25 Claims

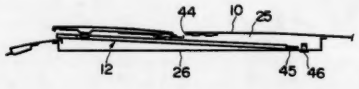


1. A vehicle roof member comprising a fixed roof section with an aperture surrounded by a frame and a cover panel for opening and closing said body member aperture guide tracks disposed laterally in said frame, and being provided with latching holes, said cover being guided in said guide tracks by front and rear sliding shoes for displacement in a direction parallel to said guide tracks between a first, closed, position sealing said aperture and a second, open, position uncovering said aperture, pivot means mounting said cover panel for pivotable movement about an axis running at right angles to the displacement direction near a forward edge of the cover panel for enabling said cover panel to be swung upwardly about said axis from said first position to a third, open, position wherein a rear edge of said cover panel is positioned above said roof member, said cover being further provided with lifting elements, said lifting elements being connected to the rear sliding shoes, an actuating device drivingly connected to incompressible cables guided in tubes for displacing said rear sliding shoes, said actuating device being mounted on the cover panel, latching hooks swivelably mounted on the rear sliding shoes and for engaging with said latching holes, latching spring means for moving said hooks into a latching position, unlatching means connected to said cables for displacing said latching hooks from said latching position, and connection means interconnecting the ends of said cables with play to the rear sliding shoes and being so constructed that, when displaced in at least one direction, the cables initially bring latching hooks which are in a latched position into an unlatched position and then displace the rear sliding shoes.

4,272,123
VEHICLE ROOF CONSTRUCTION

Keiji Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 29, 1979, Ser. No. 24,976
Claims priority, application Japan, Mar. 30, 1978, 53/37009
Int. Cl.³ B60J 7/04
U.S. Cl. 296—222 8 Claims



1. A rail unit for a vehicle having a roof frame bounding an opening in the roof of the vehicle and a sliding roof movable to open and close said opening, said rail unit being completely assembled prior to being secured to the roof frame for slidably mounting the sliding roof thereon, said rail unit comprising:

(a) a front rail extending transversely to the vehicle axis and having a pair of substantially parallel grooves therein;

(b) a pair of lateral rails which extend substantially parallel to the vehicle axis at opposite sides of said opening, each of the lateral rails having a pair of substantially parallel grooves therein and having one end adjacent an end of the front rail;

(c) a pair of cornering members, each interposed between an end of the front rail and an end of a lateral rail and having a pair of substantially parallel grooves therein, the ends of the grooves in each of the cornering members being in substantial alignment with the ends of the grooves in the adjacent front and lateral rails, and each cornering member including a projection extending from between the parallel grooves for engaging the adjacent lateral rail and securing it to the cornering member;

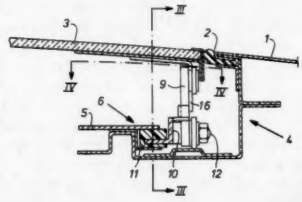
(d) cable means operatively connected to the sliding roof for effecting movement thereof, the cable means being situated in, and guided by, the grooves in the front and lateral rails and the cornering members; and

(e) a cover fixedly mounted on, and securing together, the front rail and the cornering members.

4,272,124
DEVICE FOR HEIGHT ADJUSTMENT OF A RIGID SLIDING COVER

Walter Schätzler, Aufhausen, and Georg Kohlpaintner, Maisach, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,543
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840443
Int. Cl.³ B60J 7/00
U.S. Cl. 296—222 9 Claims

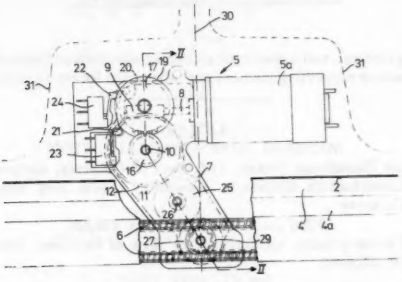


1. A rigid sliding cover panel assembly for a motor vehicle roof of the type having a cover panel that is slidable in guide tracks between positions opening and closing a roof opening via sliding shoes connected to said cover panel and having adjustment means for adjusting the height of said cover panel relative to said roof opening when said cover panel is in the position closing the roof opening, said height adjustment means comprising a lever mounted by a rotatable connector to said cover panel so as to be rotatable about an axis intermediate its ends, locking means associated with said lever for securing the lever in any rotation position relative to said cover panel, and a link arm having one end swivelably connected to an end of said lever and an another end connected to a sliding shoe via a swivelable connection, whereby rotational adjustment of said lever about said axis will adjust the height of said cover panel relative to said sliding shoe.

4,272,125
VEHICLE ROOF

Horst Bienert, Gauting; Richard Igel, Germering, and Johann Rengstl, Munich, all of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,234
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 7801538[U]
Int. Cl.³ B60J 7/04
U.S. Cl. 296—223 8 Claims



1. An electric motor drive arrangement for use in place of a manually operated crank drive of a movable closure panel for opening and closing an opening in a vehicle body member of the type having a drive pinion located on a central longitudinal axis of the vehicle body opening and in the vicinity of a leading edge thereof, said drive arrangement comprising:

(a) an intermediate drive connected to said drive pinion and disposed in a drive housing; and

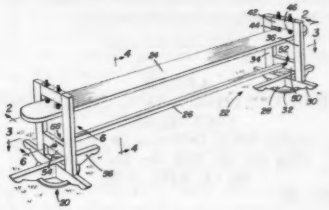
(b) an electric motor flanged to said drive housing to form a module and drivingly connected to said intermediate drive, said module being generally V-shaped when viewed from above, one leg of said V-shape comprising said electric motor and being disposed at a right angle with respect to said longitudinal axis and the other leg of said V-shape being formed by said intermediate drive and drive housing, said other leg having a longitudinal axis that extends at an angle relative to said central longitudinal axis, whereby said arrangement is able to fit into conventional vehicle body configurations including those having limited available space longitudinally of said leading edge and laterally of said longitudinal axis, such as those having depressions for acceptance of sun visors.

4,272,126
JOGGLING BOARD FOR USE AS EXERCISE DEVICE OR AS ITEM OF LAWN FURNITURE

Walter L. Cadle, Tucker, Ga., assignor to Rose Marie Cadle, Tucker, Ga.

Continuation-in-part of Ser. No. 929,113, Jul. 27, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,172
Int. Cl.³ A47C 3/029
U.S. Cl. 297—258 23 Claims

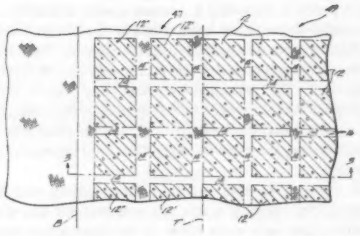
1. An exercise device or lawn furniture device comprising a horizontal longitudinally extending board for supporting one or more persons, a pair of spaced apart support assemblies having mounting means flexibly holding each end of said board to permit combined longitudinal and transverse motion of the board with respect to the support assemblies caused by a person's movements on said board, and an elongated lower spacing member mounted at each end to said support assemblies beneath and parallel to said board, each of said support assemblies having rocker means directly contacting a floor or the earth for permitting combined rocking movements in longitudinal and transverse directions of said support assemblies device, said assemblies moving in unison with each other.



4,272,127
SUBSIDENCE CONTROL AT BOUNDARIES OF AN IN SITU OIL SHALE RETORT DEVELOPMENT REGION

Ned M. Hutchins, and Irving G. Studebaker, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Dec. 3, 1979, Ser. No. 99,531
Int. Cl.³ E21B 43/247, 43/263
U.S. Cl. 299—2 42 Claims



20. An array of in situ oil shale retorts within boundaries of unfragmented formation in a subterranean formation containing oil shale, each such in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale and being separated from adjacent in situ retorts by vertically extending partitions of unfragmented formation,

said array comprising a first region of retorts remote from a boundary of the array wherein the ratio of horizontal areal extent of the fragmented masses in such retorts to the horizontal areal extent of unfragmented formation in such partitions is such that overburden at elevations above the retorts in the first region is supported primarily by such fragmented masses, and a second transition region adjacent a boundary of the array wherein the ratio of the horizontal areal extent of the fragmented masses in the retorts in the second region to the horizontal areal extent of unfragmented formation in partitions adjacent thereto progressively decreases as the retorts in such second region approach such boundary.

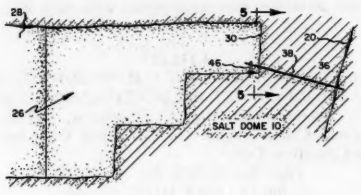
31. A method for controlling subsidence of overburden at elevations above an array of in situ recovery zones formed within boundaries of unfragmented formation in a subterranean formation, comprising explosively expanding formation within a plurality of adjacent sites for forming a fragmented permeable mass of formation particles within each of a plurality of horizontally spaced apart in situ recovery zones, such recovery zones being separated by vertically extending partitions of unfragmented formation, the fragmented masses being formed so they progressively support proportionately less of the load from overburden at elevations above a row of such

recovery zones, and such partitions of unfragmented formation progressively support proportionately more of the load of such overburden in a direction extending along the length of the row of recovery zones toward such a boundary in an end portion of the row adjacent such boundary.

4,272,128
METHOD OF CREATING A SAFE ENVIRONMENT IN SALT MINING

Charles H. Jacoby, 959 E. Driftwood Dr., Tempe, Ariz. 85283

Filed Jan. 30, 1980, Ser. No. 116,930
Int. Cl.³ E21C *41/08*
U.S. Cl. 299—12 **9 Claims**



1. An improved method for conducting a mechanical mining operation which routinely employs sequential drilling, blasting, and product removing processes against a mine work face, conducted from within a mine room or the like in a deposit of salt which per se is basically impermeable to fluid transport therethrough but which deposit vicariously includes crevices/pockets or the like occupied by pressurized and/or combustible materials such as would be dangerous to the mining operation if encountered incidental to the routine processes of drilling and blasting the mine working face; said improved method comprising:

prior to each routine working face drilling and blasting operation, creating a safe environment for the workmen within said open mine room or the like by first boring an exploratory hole into the salt deposit ahead of the mine working face beyond the region into which said mine face drilling and blasting operation is subsequently to be performed, and dilating/fracturing the salt deposit beyond said mine work face via said bore hole so as to preliminarily discover existence therein of any such pressurized/combustible materials;

controlling release of any said materials as may thereby be encountered so as to create a safe working environment condition for said routine operations;

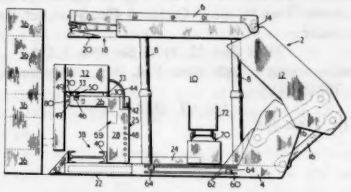
and then subsequently performing said routine mine face drilling, blasting, and broken salt removal processes under said safe environment condition.

4,272,129
MINERAL MINING INSTALLATION

John T. Pearey, Darrington, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jul. 5, 1979, Ser. No. 55,283
Claims priority, application United Kingdom, Jul. 14, 1978, 29859/78
Int. Cl.³ E21C *29/00*
U.S. Cl. 299—31 **21 Claims**

1. A mineral mining installation including a self-advancing roof support having a roof-engaging member and a floor-engaging member, wherein the floor-engaging member has a forward part and a rearward part, the forward part being movable relative to the rearward part, a machine supporting element mounted on said forward part at an elevated level above the level of the said forward part, means for supporting and guiding a mineral mining machine on the machine support-

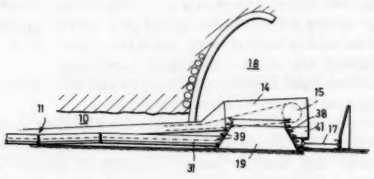


ing element, and a conveyor receiving area defined beneath the machine supporting element and adapted to locate a conveyor.

4,272,130
MINERAL MINING INSTALLATION

Alois Hauschopp, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,696
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900661
Int. Cl.³ E21C *27/32*
U.S. Cl. 299—34 **19 Claims**



1. A mineral mining installation for winning material in a longwall working, comprising: a longwall conveyor; a guide provided at the face-side of the conveyor, the guide including a plurality of generally L-shaped guide sections, one arm of each L-shaped guide section being attached to said conveyor and the other arm of each guide section extending toward the face to be won; a drive frame at each end of the conveyor; a plough drive chain passing around a pair of end sprockets positioned at the goaf-side of the conveyor, each sprocket being associated with a respective one of the drive frames; a plough movable in the direction of the conveyor, the plow being formed with guide surfaces which cooperate with the guide, the plough having a plough body provided with cutters at one end thereof, and with a sword plate which passes underneath the conveyor, the sword plate having a coupling member which engages the plough drive chain and which is set back relative to the cutters by a sufficient distance to enable the plough to win material up to the appropriate end sprocket when the plough is moving in such a direction that the cutters are leading cutters.

4,272,131
SPEED RETARDER CONTROL SYSTEM

Charles G. Termont, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 17, 1979, Ser. No. 76,462
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—3 **1 Claim**

1. A speed retarder control system for a vehicle comprising:

(a) first conduit means to conduct pressure-influenced hydraulic fluid;

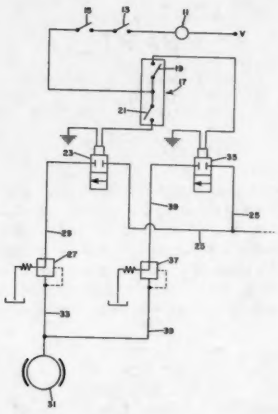
(b) pressure reducing means for receiving said fluid from

said first conduit means at a high pressure and discharging said fluid at a low pressure including:

(i) at least two electrically responsive two-position normally closed solenoid valves to receive fluid from said first conduit means, said second solenoid valve position being open;

(ii) at least two reducing valves;

(iii) a plurality of second conduit means for conducting fluid from one of said solenoid valves to one of said reducing valves;



(iiii) activation means for selectively activating said solenoid valve whereby said reducing valves are set to release said fluid at different corresponding pressures;

(c) retarding means for receiving said fluid released from said pressure reducing means, and providing a retarding force to said vehicle; and

(d) third conducting means for conducting said fluid from said pressure reducing means to said retarding means.

4,272,132

CONTROL MECHANISMS FOR VEHICLE BRAKING SYSTEMS

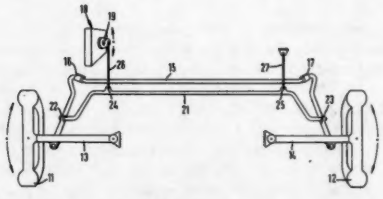
Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Warwickshire, England

Filed Sep. 18, 1979, Ser. No. 76,808

Claims priority, application United Kingdom, Sep. 22, 1978, 37761/78

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—22 R **3 Claims**



1. In a motor vehicle including:

one wheel on one side of the vehicle;

another wheel on the other side of the vehicle;

one suspension component which during vehicle cornering moves with vertical movement relative to the vehicle body of said one wheel;

another suspension component which during vehicle cornering moves with vertical movement relative to the vehicle body of said other wheel; and

a braking system comprising:

a driver-controlled source of fluid pressure;

one brake operative to brake said one wheel;

another brake operative to brake said other wheel;

one pressure modulating valve interposed between said source and said one brake;

another pressure modulating valve interposed between said source and said other brake;

a control mechanism for controlling said pressure modulating valves in response to movements of said suspension components to modify, during cornering only, the performance of the modulating valve associated with the inboard of said wheels so that any pressure supplied to the brake which acts on said inboard wheel is lower than any pressure suppled to the brake which acts on the outboard of said wheels;

the control mechanism comprising:

a member having four connecting points which are normally in a common plane and are arranged at the corners of a trapezium;

the member being adapted to be connected at the first point to said one suspension component;

at the second point to said other suspension component and at the third point to the modulating valves;

the fourth point being restrained in a direction substantially perpendicular to the common plane, the arrangement being such .hat for vertical movements of said wheels relative to the vehicle body which are equal and in the same direction;

the member pivots freely about the third and fourth points and for movements of said wheels relative to the vehicle body which are unequal and for movements of said wheels relative to the vehicle body which are in different directions the member tends to pivot on a line passing diagonally through the fourth point.

4,272,133

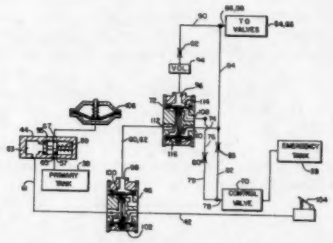
ANTI-LOCKING WITH FAIL SAFE SYSTEM

George Mekosh, Jr., Warrington, Pa., assignor to The Budd Company, Troy, Mich.

Filed May 2, 1979, Ser. No. 35,260

Int. Cl.³ B60T *8/093*

U.S. Cl. 303—99 **15 Claims**



1. In combination with a wheel on a vehicle, having a brake associated therewith,

a fluid pressure controlled anti-lock system comprising:

(a) a source of braking pressure,

(b) means for applying said braking pressure to said brake,

(c) a valve system including normally closed valves responsive to the speed of said wheel having pressure therein to control the operation of said means for applying said braking pressure to permit braking pressure to be applied to said brake during normal braking operations,

(d) said valves opening to release the pressure in said valve system to prevent braking pressure from being applied

to said brake when the deceleration of said wheel exceeds a predetermined rate, and

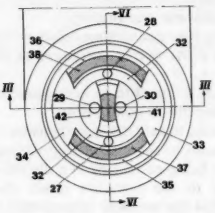
(e) pressure controlled time delay means for rendering ineffective said valve system when the pressure therein drops and remains below a predetermined level for a predetermined time interval while still permitting normal braking operations.

4,272,134

ROTARY DRILL BIT

Bert G. Levefelt, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jun. 26, 1979, Ser. No. 52,185
Claims priority, application Sweden, Jul. 11, 1978, 7807708
Int. Cl.[3] F16C *1/24, 19/16*
U.S. Cl. 308—8.2 **10 Claims**



1. A rotary drill bit having improved cooling means for cooling the bearing surfaces therein and comprising a head, at least one bearing shaft projecting from said head, a roller cutter rotatably mounted on said bearing shaft, said roller cutter carrying cutting means, bearing means for rotatably supporting said roller cutter on said bearing shaft, said bearing means comprising cooperating annular surfaces on said roller cutter and bearing shaft for transmitting axial forces from said roller cutter to said bearing shaft, said annular surfaces being substantially normal to the axis of rotation of said roller cutter and positioned axially inwardly of the outer end of said bearing shaft, and passage means in said bearing shaft for supplying cooling fluid to said bearing means, the improvement wherein said passage means comprises:

a first recess portion in at least one of said annular surfaces, said first recess portion being endless and extending entirely around said bearing shaft within a plane disposed substantially normal to said axis of rotation and providing a continuous path for cooling fluid spaced radially inwardly from the peripheral edge of said one annular surface,

at least a first passage extending through said bearing shaft and terminating within said first recess portions for conducting cooling fluid thereto, and

at least one second recess portion extending radially outwardly from said first recess portion for conducting cooling fluid from said first recess portion.

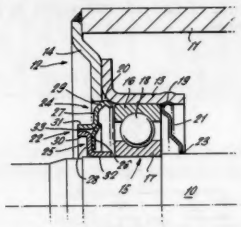
4,272,135

SEAL FOR A ROLLING BEARING

Ronald F. Hamblin, and Harry H. Westgate, both of Luton, England, assignors to SKF (UK) Limited, Bedfordshire, England

Filed Oct. 19, 1979, Ser. No. 86,335
Claims priority, application United Kingdom, Oct. 23, 1978, 41569/78
Int. Cl.[3] F16C *33/78;* F16J *15/34*
U.S. Cl. 308—20 **6 Claims**

1. A seal for a rolling bearing comprising two sheet metal annular members one surrounding the other, and a resiliently deformable sealing element, each annular member comprising an annular radially extending disc having a radially outer periphery and a radially inner periphery, a first annular portion extending axially from the radially outer periphery of the disc and a second annular portion extending axially from the radially inner periphery of the disc, the first annular portion of the radially outer annular member being adapted to be secured in the bore of a housing, the second annular portion of the radially inner annular member being adapted to be mounted on a



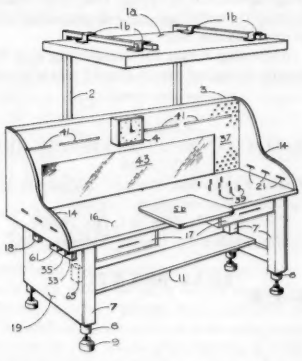
shaft, the first annular portion of the radially inner member being spaced radially inwardly from and being adjacent to the second annular portion of the radially outer member to define an axially extending annular gap between the two said adjacent portions, and the sealing element being attached to one annular member, extending across and bridging the said annular gap and being in rubbing contact with the other annular member.

4,272,136

WORK STATION

Saturnino Sengua, 5850 E. Burns, Tucson, Ariz. 85711

Filed May 29, 1979, Ser. No. 42,801
Int. Cl.[3] A47B *96/18;* F16M *11/24*
U.S. Cl. 312—196 **6 Claims**



1. A technician's work station for repairing equipment and instruments comprising a work top, said work top having operably attached thereto a turning table and tool receiving pin means; a backboard attached to said work top, said backboard having attached a mirror, small tool holding magnetic strips, and a clock; end side boards attached to the work top and backboard; and lighting means operably attached to said backboard whereby a lighted work station, enclosed on three sides, holding small tools in easy accessible range, is provided enabling a technician repairing an instrument to view the back of the instrument simultaneously with the front to time operations of equipment and instrument, and wherein, a piece of equipment or instrument under repair or test may be placed on said turning table for a rotational ease of accessibility and tools to be used by the technicians are readily accessible and retrievable from the tool receiving pin means.

4,272,137

FIRE RESISTANT CABINET WITH PROTECTIVE VOID IN GYPSUM FILLING

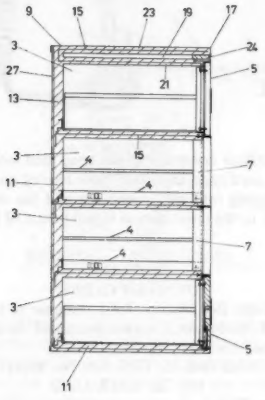
Friedrich Rothhaas, Bellheim, and Günther Pichler, Germersheim, both of Fed. Rep. of Germany, assignors to Sistemco N.V., Curaco, Netherlands

Filed Apr. 3, 1979, Ser. No. 26,744

Claims priority, application Switzerland, Apr. 17, 1978, 4070781/78

Int. Cl.[3] E04B *2/34;* B65D *25/18*

U.S. Cl. 312—214 7 Claims



1. A fire resistant cabinet having an outer casing and an inner wall surface and a gypsum filling therebetween, comprising the improvement which consists in that the top (17) portion of the gypsum filling (13) of the cabinet one or more hollow spaces (19) are provided, said hollow space or spaces extending practically over the whole width and depth of the cabinet and having no communication with any hollow spaces in other portions of said gypsum filling.

4,272,138

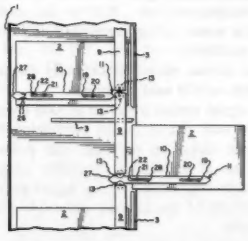
CABINET DRAWER ANTI-TIP LOCK DEVICE

Forest G. Stark, Jamestown, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,220

Int. Cl.[3] E05C *7/06;* A47B *88/00*

U.S. Cl. 312—221 16 Claims



1. An improved cabinet of the type having a case with a plurality of horizontally movable components mounted therein, the improvement characterized by an anti-tip mechanism for preventing more than one component from being opened to its fully extended position at one time, said anti-tip mechanism comprising:

(a) a segmented lock bar extending adjacent each of said components, said lock bar comprising a plurality of longitudinally extending snubber elements axially aligned in end-to-end abutment, said elements being resiliently mounted within said cabinet on said case to permit movement in opposite directions from a central equilibrium position to first and second opposite axially displaced positions; and

(b) a plurality of longitudinally extending activator rails each disposed substantially normal to said lock bar, each rail being carried by a different one of said components, each rail being disposed with one of its ends positioned to insinuate itself between adjacent snubber elements when its respective component is opened and so shaped with respect to said adjacent snubber elements to displace all of the snubber elements from their central equilibrium positions to one of said first and second positions with the snubber elements located in one of said directions with respect to said insinuated rail moving to said first axially displaced position and those located in the opposite of said one direction moving to said second axially displaced position, whereby the remainder of said plurality of rails and their respective components are blocked by a displaced snubber element.

4,272,139

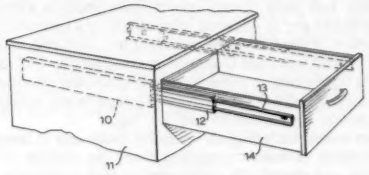
SLIDING DRAWER SUSPENSION

Jack P. Fler, Kitchener, Canada, assignor to Jacmorr Manufacturing Limited, Kitchener, Canada

Continuation-in-part of Ser. No. 941,585, Sep. 12, 1978. This application Feb. 8, 1979, Ser. No. 10,419

Int. Cl.[3] A47B *88/00;* F16C *21/00*

U.S. Cl. 312—334 20 Claims



1. A sliding drawer suspension comprising an outer channel-section rail including channel sides and a channel bottom, and having in a retracted position an intermediate channel rail nested between the sides of the channel of the outer channel section rail, said intermediate rail having channel sides and a channel bottom, and an inner channel-section rail nested in a retracted position between the intermediate channel sides, outer and inner linear ball bearings each including a ball cage between the outer and intermediate rails and between the intermediate and inner rails, respectively, permitting the intermediate and inner rails to slide forwardly relative to the outer and intermediate rails, respectively, to an extended position, latching means releasably latching the inner rail in stationary nested relationship within the intermediate rail, whereby when the inner rail is extended, the intermediate rail remains stationary relative thereto and moves together therewith relative to the outer rail in stationary latched connection thereto, a pair of stop members on the outer and intermediate rails arranged for engaging end surfaces on the outer ball cage to limit extension of the intermediate rail relative to the outer rail, a pair of stop members on the intermediate and inner rails arranged for engaging end surfaces on the inner bearing ball cage to limit extension of the inner rail relative to the intermediate rail, said bearing members being normally positioned so that the end surfaces of each ball cage are spaced at equal distances from the stop surfaces with which they engage, and including on at least one rail selected from said outer rail and said intermediate rail an abutment member which in the closed position of the suspension abuts an end surface of the outer bearing ball cage and engages it when displaced from its normal position and

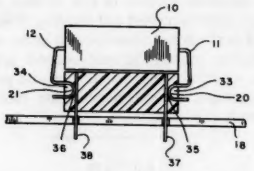
shifts it to its normal position on closing movement of the suspension.

4,272,140

ARRANGEMENT FOR MOUNTING DUAL-IN-LINE PACKAGED INTEGRATED CIRCUITS TO THICK/THIN FILM CIRCUITS

George S. Lychyk, River Forest, and Wayne E. Neese, Hoffman Estates, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 19, 1979, Ser. No. 105,180
Int. Cl.³ H05K 1/12
U.S. Cl. 339—17 CF **7 Claims**



1. An arrangement for mounting and electrically connecting an integrated circuit package having at least two side surfaces and a lower surface, to a planar surface including conductive portions, comprising:

at least two electrical leads, each lead including a fixed end, an intermediate section and a free end, each of said fixed ends integrally mounted to a different one of said integrated circuit package side surfaces directly opposite each other and each of said intermediate sections extending vertically and in a spaced relationship to a respective side surface beyond said lower surface to a free end; and

each of said free ends U-shaped in cross section including a first leg extending perpendicularly from said intermediate section parallel to said integrated circuit lower surface and a second leg parallel to said first leg;

socket means including an insulative body and at least two electrical terminals extending from the interior of said body and electrically connected to said conductive portions, and at least two openings, each of said openings extending through said body to a different one of said terminals and each of said openings formed to accept a different one of said integrated circuit free ends, with each of said free ends engaging a respective terminal, mounting and electrically connecting said integrated circuit thereat.

4,272,141

ELECTRONIC CARD CAGE INTERFACING ASSEMBLY

Robert S. McKeen, Randallstown, Md.; Kenneth S. Keefer, Mt. Holly Springs, Pa., and Theodore E. Sawyer, Northridge, Calif., assignors to Frederick Electronics, Frederick, Md.

Filed Jun. 11, 1979, Ser. No. 47,633
Int. Cl.³ H05K 7/02, 7/16
U.S. Cl. 339—18 R **11 Claims**

1. A modularized interfacing assembly for providing electrical connections between external customer termination leads and internal input-output signal points of an electronic card cage, said assembly comprising:

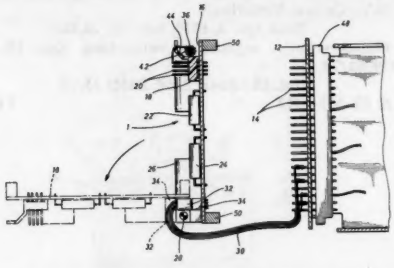
(a) a mounting frame rotatable with respect to the card cage;

(b) at least one interface board mounted to said frame for rotation therewith, said board having electrical circuits thereon;

(c) at least one termination block mounted on each interface board, for electrically connecting the termination leads to the electrical circuits on said board;

(d) at least one multi-pinned connector mounted on each interface board, for providing a quick disconnectable input-output connection port between the circuits on said board and the input-output signal points of the card cage, the pins of said connector connected to the electrical circuits on said board; and

(e) at least one electrical interconnect cable, for providing



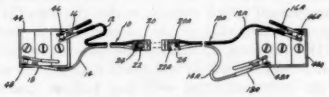
the electrical connections between said interface boards and the card cage, each said cable having one end adapted for plugging into said connector and the other end connectable to the input-output signal points of the card cage.

4,272,142

JUMPER CABLE

Richard L. Zapf, Des Moines, Iowa, assignor to Milton Brown; Laurence L. Anderson; Leonard Smith and David Belin, all of Des Moines, Iowa, part interest to each

Filed Oct. 15, 1979, Ser. No. 84,619
Int. Cl.³ H01R 11/22
U.S. Cl. 339—29 B **6 Claims**



1. A jumper cable device, comprising,

a first electrical cable means having opposite ends,

a pair of electrical connector clamps on one end of said first electrical cable means,

an electrical coupling on the other end of said first electrical cable means,

a second electrical means having opposite ends,

a pair of electrical connector clamps on one end of said second electrical cable means,

an electrical coupling on the other end of said electrical cable means,

each cable means being comprised of positive and negative cable elements,

electrical circuit means electrically connecting said cable elements within said couplings,

polarity signal means imposed in said circuit means,

a diode in said circuit means permitting flow of current in only one direction through said polarity signal means from one of said cable elements whereby the flow of current through said polarity signal means is indicative of the polarity of the clamps and cable elements associated therewith,

said electrical couplings adapted to be secured directly together to effect electrical connection between said first and second electrical cable means,

said electrical couplings having positive and negative terminals electrically connected to the positive and negative cable elements, respectively, of each cable means, and means on said couplings permitting the interconnection of said positive terminals together and permitting the interconnection of said negative terminals together, and pre-

venting the interconnection of said positive and negative terminals.

4,272,143

RACK FOR CIRCUIT BOARDS

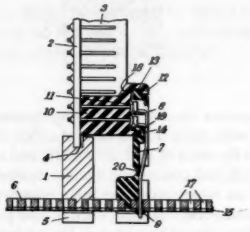
Harald Weiss, Bremen, Fed. Rep. of Germany, assignor to Vero Electronics GmbH, Bremen, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,334

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845884

Int. Cl.³ H05K *1/07*

U.S. Cl. 339—74 R **2 Claims**



1. A rack for circuit boards comprising upper and lower sets of opposed horizontal guide rails into which the upper and lower edges of circuit boards can be slid, horizontal bus strips attached to at least one set of rails, the bus strips carrying spaced electrically conducting strips which are insulated from one another and serve for transmission of logic signals to the boards and also for transmission of signals between the boards, a set of insulating blocks on the edges of the boards which carry contacts connected to components on the boards, a set of cooperating other insulating blocks on the bus strips which carry contacts connected to the conducting strips on the bus strips, the blocks on the board and blocks on the bus strips inter-engaging with their respective contacts out of engagement with one another when a board is slid into the rack, and means operating as the board is slid fully home into the rack to effect relative movement of the blocks to bring the contacts carried by the board into engagement with the contacts carried by the bus strips.

4,272,144

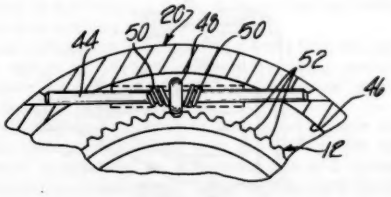
SPRING LOADED ANTI-ROTATION DEVICE FOR ELECTRICAL CONNECTORS

Robert W. Brush, Unadilla; Dee A. Werth, Nineveh, and Alan L. Schildkraut, Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 18, 1979, Ser. No. 104,993

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—89 R **10 Claims**



1. An electrical connector comprising:

first and second generally cylindrical electrical connector bodies carrying mating electrical contacts and adapted to be advanced into mating engagement by relative axial movement therebetween;

a coupling nut member having an internal passage adapted to receive said first and second electrical connector bodies, said internal passage having an internal thread section formed therein adapted to be threadedly engaged with an external thread formed on one of said first or second electrical connector bodies;

said coupling nut member further including a radially inwardly extending portion engaging said other of said first or second electrical connector bodies to enable said coupling nut member to cause relative axial advance of said one of said first or second electrical connector bodies into engagement with said other of said first or second connector bodies;

anti-decoupling means resisting relative rotation between said coupling nut member and said mated first and second electrical connector bodies in the direction producing uncoupling of said first or second electrical connector bodies while enabling rotation of said coupling nut member in the opposite direction tending to produce coupling movement of said first and second electrical connector bodies, said anti-decoupling means comprising:

an axle mounted within said coupling nut member internal passage so as to lie in a radial plane and extending transversely to the axis of said coupling nut member;

an engagement element mounted to be slidable on said axle;

bias means urging said engagement element into an intermediate position on said axle;

a circumferentially extending series of serrations formed on said other of said first or second connector bodies, the spaces intermediate said serrations receiving said engagement element;

whereby axial movement of said engagement element on said axle accommodates relative rotation of said nut member and said first and second electrical connector bodies during rotation thereof to produce said mating engagement of said first and second electrical connector bodies, while said rotation is resisted by said bias means resisting said axial movement of said engagement element.

4,272,145

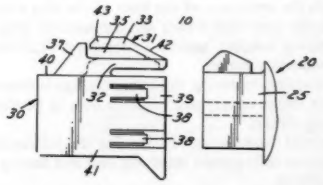
CONNECTOR LOCK RELEASE

Jack E. LaDuke, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 22, 1979, Ser. No. 87,193

Int. Cl.³ H01R *13/627*

U.S. Cl. 339—91 R **6 Claims**



1. Matable electrical connector means having lock means comprising:

a first connector body of molded insulating material having at least one first longitudinal open ended terminal receiving cavity having a first terminal retained therein having a forward female portion;

a second connector body of molded insulating material having at least one second longitudinal open ended terminal receiving cavity having a second terminal retained therein having a forward male portion;

one of said first and second connector bodies having an integral cantilevered latch arm means and the other of said

first and second connector bodies having protruding generally triangular locking ramp means which cooperate to lock said connector body in said mated position;

said latch arm means including a first leg projecting forward and a second, integral leg extending backward from the forwardmost portion of said first leg thus generally forming a V-shape, said forwardmost portion of said first leg engaging said ramp means and being deflected outwardly during mating, said second leg being capable of coacting with said ramp means as a lever and a fulcrum to assist in raising said first leg to release said lock means; and

guard means extending from a main portion of the connector body having said latch arm means toward the free rearwardmost end of said second leg thereby acting to shield said V-shaped opening between said first and said second legs and preventing wires from being snagged in the opening between said first and second legs.

4,272,146

CONNECTOR FOR A RING CIRCUIT OF A BUS-SYSTEM

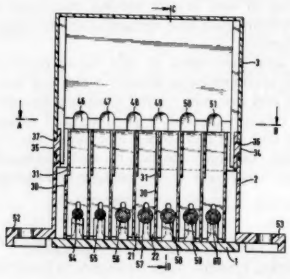
Ernst-Ulrich Simon, Oberursel, and Horst Ullrich, Schöneck, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,599

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829849; Jul. 7, 1978, 2829850

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—99 R **9 Claims**



1. In a connector for a ring circuit of a bus-system with a plurality of connectable information sending and/or information receiving units, the connector having a housing with several plug contacts provided with cutters, which cutters cut through the insulation of the lines of the ring circuit for contacting the lines and which are connectable with at least an information sending and/or information receiving unit, the improvement wherein

the housing receiving the contact plugs is constructed as a connector upper part which is able to be slipped on the ring circuit,

a printed board assembly forming the information sending and/or information receiving unit and having connection surfaces,

a capsule slipable on said connector upper part of the housing and housing said unit,

the plug contacts have contact surfaces which contact said connection surfaces of said printed board assembly,

a plurality of projections formed on an upper outer edge of said connector upper part, and said capsule has a lower inner edge forming a plurality of grooves, respective of said projections fit in only one specific of said grooves respectively on said lower inner edge of said capsule and cooperatively define a singular predetermined combination means for non-interchangeability of the capsule and of the associated said connector upper part in only one relative position.

4,272,147

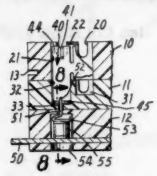
MODULAR CONNECTOR AND PROTECTOR

Sidney J. Berglund, Stillwater, and Gary B. Matthews, Birchwood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 14, 1979, Ser. No. 75,737

Int. Cl.³ H01R *4/10*

U.S. Cl. 339—99 R **6 Claims**



1. A connector module for making connection between a plurality of wire pairs from a central office and a plurality of user stations for each of said wire pairs, and useful in the protecting of each said connection against incidental overvoltage, comprising: an upper insulative body member having a series of pairs of transverse channels, each of said pairs of transverse channels being crossed by a pocket, the pockets being arranged successively in alternate longitudinal rows; a lower insulative body member fitting against said upper member, having a series of transverse channels aligned with one channel of each said pairs of channels, a narrow pocket across each of said aligned channels aligned with the corresponding pocket in said upper member, a wide pocket beneath the other channel of each said pair of channels extending from said corresponding pocket, and a vertical slot extending across the lower surface of said lower member from said wide pocket to a flared opening at the front face of said lower member; and for each pair of channels, a contact element in the form of a flat plate having a dependent leg ending in a bifurcate foot, said plate being retained within said pocket in said upper member, having first and second wire-accepting U-slots in alignment with the first and second channels respectively of said pair of channels, said plate extending into said narrow pocket in said lower member and having a third U-slot in alignment with said aligned channel, and said leg and foot fitting within said wide pocket with the opening of the bifurcate foot in alignment with said vertical slot.

4,272,148

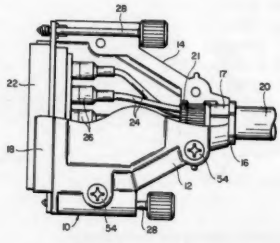
SHIELDED CONNECTOR HOUSING FOR USE WITH A MULTICONDUCTOR SHIELDED CABLE

Albert C. Knack, Jr., Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 5, 1979, Ser. No. 27,204

Int. Cl.³ H01R *13/58;* H05K *9/00*

U.S. Cl. 339—143 R **8 Claims**



1. A shielded housing for a connector attached to a cable

having one or more insulated conductors in a common conductive shield covered by an insulative plastic sheath, the housing comprising:

a generally cylindrical ferrule for surrounding a portion of the insulative plastic sheath on the end of the cable attached to the connector and having a plurality of longitudinal slots that allow the ferrule to be compressed and engage the sheath; and

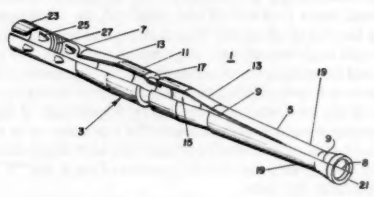
mating first and second shells, each shell having connector retaining means for retaining and making electrical contact with the connector, and a cable recess for retaining the cable by compressing the ferrule sufficiently to deform the sheath and cause some of the sheath material to flow into the slots and making electrical contact with the conductive shield by clamping the shield between the outer surface of the ferrule and the cable recess when the first and second shells are mated together.

4,272,149

ONE PIECE SOCKET TYPE ELECTRICAL CONTACTS

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, New Berlin, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 28, 1979, Ser. No. 79,764
Int. Cl.³ H01R *13/428*
U.S. Cl. 339—258 R **2 Claims**



1. An electrical contact stamped and formed into a tubular body from a single sheet of metal, said tubular body comprising:

a longitudinal seam extending the entire length thereof;

a mating portion at one end, said mating portion having a longitudinal slit extending from one end thereof and located opposite from the longitudinal seam, said slit and said seam defining two resiliently deflectable fingers at said mating end;

a wire receiving portion at the other end;

a center section having a larger diameter than the mating and wire receiving portions thereof; and

tapered portions extending radially inwardly from said center section to said mating and wire receiving portions respectively, said center section having an annular groove in the outer surface thereof; and

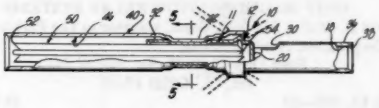
a single longitudinal opening in said tapered portions and said center section aligned with said seam so that said center section may be compressed like a C spring, whereby when said contact is inserted into a bore having a diameter slightly smaller than the diameter of said contact center section, the opposite sides of said opening rotate towards each other to reduce the diameter of the center section.

4,272,150

ELECTRICAL CONTACT FOR AN ELECTRICAL CONNECTOR

LeRoy W. Fairbairn, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 24, 1979, Ser. No. 78,255
Int. Cl.³ H01R *11/00*
U.S. Cl. 339—276 T **2 Claims**



2. A contact for an electrical connector, said contact comprising:

an elongated electrically conducting tubular holder having an axial passage extending completely therethrough, a flange projecting radially inwardly from the wall of the holder and located intermediate the ends thereof to define a forward portion and a rear portion, said flange having an inner end integral with the wall of said holder and a free end terminating on the opposite side of the longitudinal axis of said holder from said inner end to substantially close the axial passage in said holder, said flange defining a limit stop when a conductor is inserted into the rear portion of the holder, and a shoulder projecting radially outwardly from the tubular wall of the forward portion of said holder;

a plurality of axially aligned wires disposed in the forward portion of the holder, each of said wires having a forward end portion projecting beyond the outer end of the forward portion of the holder, each forward end portion of said wire terminating in an acutely angled surface; and

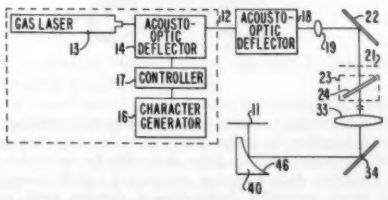
four symmetrically arranged arcuate crimps in said holder, and concave towards the central axis of said holder, said crimps located between the shoulder and the forward end of holder to retain said wires within said holder.

4,272,151

APPARATUS FOR OPTICAL SCANNING

N. Balasubramanian, P.O. Box 884, Cupertino, Calif. 95014

Filed Oct. 30, 1979, Ser. No. 89,759
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.6 **3 Claims**



1. An optical scanner comprising:

A. means defining a display area having a generally flat image field across which a beam of optical radiation is to be scanned;

B. means for providing a beam of optical radiation to be scanned;

C. means for modulating said beam of optical radiation to define with the same information it is desired be displayed at said display area;

D. a display area scanner positioned to intercept said beam of optical radiation after it is modulated to project the same to said display area;

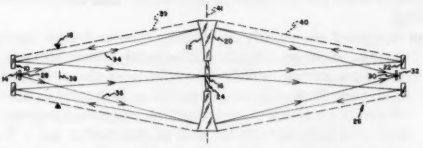
E. a simple optical element which exhibits spherical aberration disposed to intercept said beam prior to the same reaching said display area and with which the remaining optical elements associated with said display area scanner cooperate by utilizing the variation of focal length provided by said spherical aberration to maintain the imaging focal point of said beam in said flat image field.

4,272,152

UNIT MAGNIFICATION RELAY SYSTEMS

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 15, 1979, Ser. No. 84,745
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—27 **25 Claims**



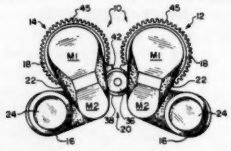
1. A unit magnification relay system comprising:
(A) a pair of concave mirrors mounted back to back and having at their vertices an aperture; and
(B) a pair of convex mirrors, one on each side of and facing said concave mirrors;
the absolute value of the base radius of curvature of all of said mirrors being substantially equal and the vertex of each said concave mirrors being spaced from the vertex of the facing convex mirror by a distance substantially equal to 0.866 times said absolute value.

4,272,153

BINOCULAR WITH NOVEL ARRANGEMENT OF HINGE MEANS BETWEEN THE TELESCOPES THEREOF

William J. Beecher, 1960 Lincoln Park West, Chicago, Ill. 60614

Filed Jul. 31, 1978, Ser. No. 929,578
Int. Cl.³ G02B *23/02, 7/06*
U.S. Cl. 350—36 **2 Claims**



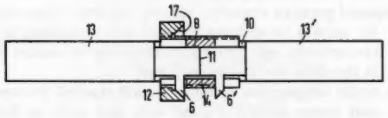
1. A binocular comprising two side-by-side telescopes connected together by hinge means in order that they may be swung toward and away from each other for binocular adjusting purposes, each telescope embodying a shell having upper and lower generally frusto-conical tubular shell portions which have their axes positioned at a right angle to each other in order to subtend a right angle space, and which are arranged with the small base of the upper shell portion intersecting the small base of the lower shell portion having extending thereacross a planar mirror with one section of its rim straight, the small base of each shell portion likewise having extending thereacross a similar planar mirror with one section of its rim straight, the planes of the mirrors at the large bases of the shell portions extending at an angle of approximately 45° to each other, the planes of the mirrors at the small ends of the shell portions extending at a right angle to each other, the mirrors at the small bases of the shell portions having the sections of the rims thereof that are opposite to the straight sections positioned in close proximity to one another, the straight rim sections of the mirrors at the ends of the upper shell portion being disposed in close opposed parallel relation, the straight rim sections of the mirrors at the ends of the lower shell portion being disposed in close opposed parallel relation and positioned apart a distance substantially greater than the distance between the straight rim sections of the mirrors at the ends of the upper shell portion, the large base of the upper shell portion being provided with a circular objective aperture in opposed and nearly touching relation with the adjacent mirror therein, the large base of the lower shell portion being provided with a circular eyepiece aperture in opposed and nearly touching relation with the adjacent mirror therein, the planes of the objective and eyepiece apertures extending each at an angle of approximately 45° to the plane of the adjacent mirror, and being in comparatively close parallelism, a lens-containing objective barrel seated within said objective aperture and extending alongside one pair of right angularly disposed mirrors, and a lens-containing eyepiece barrel seated within the eyepiece aperture and extending alongside of another pair of right angularly disposed mirrors, the upper and lower shell portions of each telescope being of such size or proportion that the mirrors at the small bases thereof are disposed without overlap in the direction of the line of sight and the mirrors at their large bases overlap only slightly in the direction of the line of sight in order that the linear distance between the outer remote surfaces of the eyepiece and objective lens of each telescope is less than one-half the extreme width of the binocular when the two telescopes are swung apart to their fullest extent, the four mirrors of each telescope being arranged in Porro-type relation, said telescopes being positioned so that the right angle spaces which are subtended by the axes of the generally frusto-conical tubular shell portions of the two telescopes face laterally away from each other, and the apices of said right angle spaces are directed towards each other, said hinge means being connected to and extending between the opposed inner portions of the shells of the telescopes, and being located in substantial lateral alignment with the apices of said right angle spaces, said hinge means including two pairs of opposed shoulders which are designed for abutment with each other so as to permit but limited up and down swinging movement of the two telescopes for lateral adjustment of the lens-containing eyepiece barrels when the binocular is in normal use, said axes of said shell portions and said hinge means together having the general configuration of the letter "X" when viewed from the front.

4,272,154

CONNECTING PLUG FOR DETACHABLY CONNECTING TWO LIGHT WAVE GUIDE CABLES

Ernst Bachel, Geltendorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,192
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759002
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.22 **4 Claims**



1. A plug connector consisting of two plug parts for detachably connecting two light wave guide cables containing optical fibers, in which the plug parts, and hence the optical fiber ends carried in the latter, are aligned relative to one another by means of a sleeve, characterized in that each plug part (13, 13')

has three planar seats which are mutually perpendicularly to each other and comprising a first front planar face (**11**), orientated perpendicularly to the axis of the plug connector, a second lateral planar guide surface (**8**), lying in a plane parallel to the axis of the plug connector, and a third planar guide surface (**10**), lying in a plane parallel to the axis of the plug connector and serving as supported surface (**3**) for the optical fiber ends, said plug connector having a center sleeve (**14**), for interconnecting the plug parts (**13, 13'**) with the ends of light wave guides aligned and each plug part (**13, 13'**) has a pin shaped extension (**6, 6'**), projecting radially toward the exterior and a tapered compression surface which is inclined relative to the axis of the plug connector such that application of a force parallel to the plug axis on this compression surface of the extension (**6, 6'**), for example, by means of nuts (**12**) threaded to the sleeve (**14**) which produce force vectors having components acting parallel to the axis and two vectors acting perpendicularly to the axis, whereby the front faces (**11**) of the plug parts (**13, 13'**) will be pressed against one another and the second and third seats (**8, 10**) of the plug parts (**13, 13'**) will be pressed against the corresponding seats (**8, 10**) of the center sleeve (**14**).

4,272,155

OPTICAL CABLES

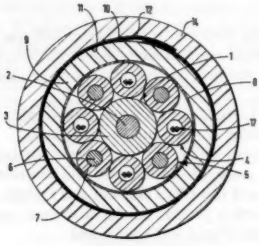
Raymond J. Slaughter, Chiselhurst, England, assignor to BICC Limited, London, England

Filed Dec. 14, 1978, Ser. No. 969,021

Claims priority, application United Kingdom, Dec. 21, 1977, 53166/77

Int. Cl.[3] **G02B** *5/16*

U.S. Cl. 350—96.23 **15 Claims**



1. An optical cable, comprising a plurality of separately formed flexible tubes in at least one of which is loosely housed at least one flexible tape which viewed in transverse cross-section, is corrugated so that it has a plurality of troughs extending along its length, at least two optical guides each comprising at least one optical fibre secured in each of at least some of said troughs an outer protective sheath surrounding the assembly of tubes, and, embedded in or surrounded by the outer protective sheath, at least one elongate reenforcing member.

4,272,156

ILLUMINATION OPTICAL SYSTEM USING OPTICAL FIBER BUNDLES

Kuniaki Ishibashi, Omiya; Norio Shiraishi, and Susumu Oshiro, both of Iwatsuki, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

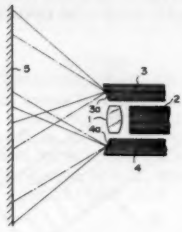
Filed Oct. 10, 1978, Ser. No. 949,629

Claims priority, application Japan, Dec. 27, 1977, 52-158119

Int. Cl.[3] **G02B** *5/17*

U.S. Cl. 350—96.26 **7 Claims**

1. An illumination optical system for an endoscope comprising a plurality of parallel illumination optical fiber bundles located adjacent to a separate image-guide optical fiber bundle which constitutes an observation system having a light-receiving end surface transverse to a first axis, each of said illumination optical fiber bundles having a plurality of light transmitting fibers and a light diverging end face which is in a single plane located at a predetermined angle with respect to said first axis and with respect to its own axis, said end faces of said illumination optical fiber bundles being so constructed and



arranged as to diverge light through an area which is in alignment with said first axis and extends beyond the area of said image-guide optical fiber bundle, said end faces of said illumination optical fiber bundles being spaced from said light-receiving end face.

4,272,157

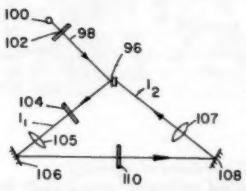
MULTI-STABLE OPTICAL SYSTEM

Stuart A. Collins, Jr., Worthington, Ohio; Uday K. Sengupta, Minneapolis, Minn., and Ulrich H. Gerlach, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Mar. 28, 1979, Ser. No. 24,603

Int. Cl.[3] **G02F** *1/01, 1/03, 1/135, 1/133*

U.S. Cl. 350—374 **23 Claims**



1. A multi-stable optical system, operable in conjunction with a source of light, comprising:

active optical spatial element means having input and output sides for treating light deriving from said source at said output side to provide light at an intensity, I_1, in response to light at intensity, I_2, incident at said input side;

optical path means for directing light from said source to said active optical spatial element output side and configured to define a feedback path extending from said output side to said input side;

said active optical spatial element and said optical path means exhibiting an operational characteristic represented by the expression:

$$\tau(dI_1/dt)+I_1=\Psi(I_2)$$

$$\tau(dI_2/dt)+I_2=\theta(I_1)$$

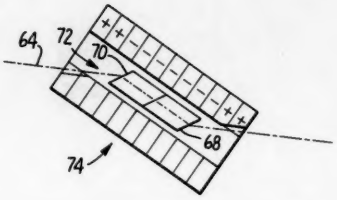
where τ and τ' are relaxation times.

4,272,158

BROADBAND OPTICAL DIODE FOR A RING LASER

Thomas F. Johnston, Jr., Sunnyvale, and William P. Proffitt, San Jose, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Mar. 2, 1979, Ser. No. 16,687
Int. Cl.[3] G02F 1/09; G01B 9/02
U.S. Cl. 350—375 10 Claims



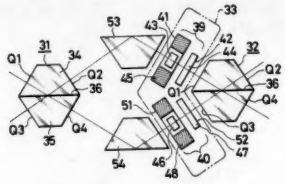
1. An optical diode for a ring laser comprising means for providing a magnetic field; and a unitary member within the magnetic field comprising a piece of material exhibiting right-handed optical activity in optical contact with a piece of the same type of material having left-handed optical activity of slightly different length.

4,272,159

OPTICAL CIRCULATOR

Takao Matsumoto, Yokosuka, Japan, assignor to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 93,967
Claims priority, application Japan, Nov. 28, 1978, 53/146897; Dec. 26, 1978, 53/162975; Feb. 26, 1979, 54/21679
Int. Cl.[3] G02F 1/29
U.S. Cl. 350—375 5 Claims



1. An optical circulator comprising:

first and second polarizing prisms each formed by two blocks of optical material joined together with a boundary layer interposed therebetween, said polarizing prisms having on either side of said boundary layer two input-/output faces each forming an acute angle with respect to the boundary layer thereby providing each of the first and second polarizing prisms with four input/output faces, said polarizing prisms being operative to separate an incident light on one of said faces into polarized components perpendicular to each other and to emit light individually from two of the other input/output faces, the boundary layers of said first and the second polarizing prisms being disposed in a common plane;

first and second total reflection prisms disposed respectively on opposite sides of said common plane between said first and second polarizing prisms and each having a coupling face coupled with the corresponding input/output face of the first polarizing prism, an opposing face disposed in parallel with the corresponding input/output face of the second polarizing prism, and a reflection face for totally reflecting an incident light from one of the coupling face and the opposing face to the other; and

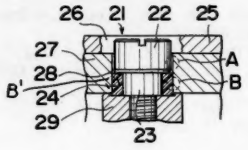
first and second non-reciprocal polarized light rotating means respectively disposed between the first total reflection prism and the second polarizing prism and between the second total reflection prism and the second polarizing prism, each of said non-reciprocal polarized light rotating means having two input/output ports and being operative to emit an incident light from one to the other of said input/output ports while rotating the direction of polarization of said incident light an odd number of times as large as 90°, and being operative to emit an incident light from said other input/output port to said one input/output port without rotating the direction of polarization of said incident light or while rotating the direction of polarization an even number of times as large as 90°.

4,272,160

SHOCK ABSORBENT SHIFTING DEVICE

Kyozo Uesugi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1978, Ser. No. 892,052
Claims priority, application Japan, Apr. 8, 1977, 52-39446
Int. Cl.[3] G02B 7/04, 15/14
U.S. Cl. 350—429 14 Claims



1. A shifting device in a lens barrel housing a lens system having an optical axis and including a front lens element at the forwardmost position on the object side of said lens system, comprising:

a rotatable barrel having a guide groove delineated substantially parallel control and back-up faces;

movable barrel means engaged in said rotatable barrel and movable along said optical axis, said movable barrel means holding said front lens element and including a front end barrel portion located at the frontmost position on the object side of said lens barrel; and

follower means including a pin member carried on said movable barrel means and loosely engaging said guide groove and including a first portion and a second portion of greater diameter than said first portion and facing said control and back-up faces, and an elastic collar member of greater diameter than said second portion provided on said pin member first portion and having a peripheral surface which is in contact with said control face and back-up face so that a small space is provided between said second portion of said pin member and both of said guide groove faces.

4,272,161

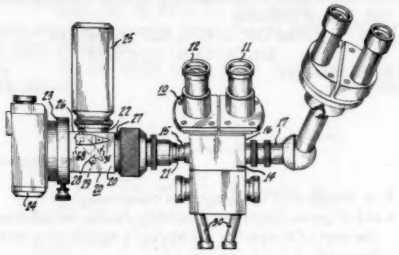
METHOD OF SPLITTING A PARALLEL BEAM OF LIGHT AT FIRST AND SECOND CAMERA LOCATIONS TO PROVIDE PAR FOCAL REGISTRATION

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.

Division of Ser. No. 888,349, Mar. 20, 1978, Pat. No. 4,143,938, which is a continuation of Ser. No. 771,181, Feb. 23, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 957,109
Int. Cl.[3] G02B 21/18
U.S. Cl. 350—320 6 Claims

1. A method of splitting a parallel beam of light indicative of the image of an object viewed by a microscope to enable par focal registration of said image at first and second camera locations, comprising the steps of:

(a) directing said beam of light to propagate through a first input aperture,
(b) converging said beam as directed through said input aperture,
(c) bending said converged beam at a predetermined distance from said input aperture at relatively an angle of ninety degrees to direct said beam to said second location,



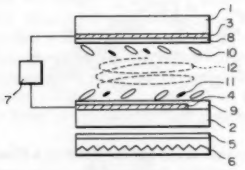
(d) placing a camera at said second location for receiving said bent beam at par focal registration,
(e) diverging said converged beam as directed through said input aperture to direct said beam to said first location,
(f) placing a camera at said first location for receiving said diverged beam at par focal registration.

4,272,162

GUEST-HOST LIQUID CRYSTAL DISPLAY DEVICE

Seigo Togashi; Takaharu Suzuki, and Takaaki Aoyama, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 95,048
Claims priority, application Japan, Nov. 21, 1978, 53-143754; Nov. 21, 1978, 53-143755
Int. Cl.³ G02F *1/137*
U.S. Cl. 350—349 **4 Claims**



1. In a liquid crystal display device having a pair of transparent plates each formed with a transparent electrode and a liquid crystal layer interposed therebetween, in which an electric field is applied to the transparent electrodes to control the transmission of unpolarized light through the liquid crystal layer, the improvement wherein:
said liquid crystal layer comprises a pleochroic liquid crystal mixture composed of a guest pleochroic material and a host liquid crystal material, said liquid crystal layer having helical molecular ordering in the absence of said electric field and homeotropic molecular ordering in the presence of said electric field;
the molecular axis of said pleochroic liquid crystal mixture is inclined at an angle of between 10 and 80 degrees with respect to the normal to said transparent plates; and
the orientation of the liquid crystal molecules at the surface of one of said pair of transparent plates crosses the orientation of the liquid crystal molecules at the surface of the other of said pair of transparent plates at an angle $\Delta\phi$ which satisfies the following relation

$$2\pi(d/Po-m+\tfrac{1}{4})<\Delta\phi<2\pi(d/Po-m+\tfrac{3}{4})$$

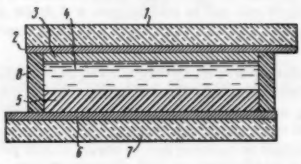
where d is the thickness of said liquid crystal layer, Po is the inherent helical pitch of said pleochroic liquid crystal mixture, and m is the maximum integer which does not exceed d/Po.

4,272,163

ELECTROCHROMIC INDICATOR

Andrei V. Samokhin, korpus 815, kv. 96; Boris G. Bekker, korpus 851, kv. 34, both of Moscow, 103527, and Alexandr N. Davydov, korpus 425, kv. 62, Moscow, 103498, all of U.S.S.R.

Filed Dec. 18, 1978, Ser. No. 970,811
Claims priority, application U.S.S.R., May 16, 1978, 2609551
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **10 Claims**



1. In a multilayered electrochromic indicator comprising:
a first substrate made of an optically transparent material;
a first electrode made of an optically transparent material contacting said first substrate;
a layer of a solid inorganic electrochromic material contacting said first electrode;
a layer of an electrolyte contacting said layer of solid inorganic electrochromic material;
a second electrode; and
a second substrate contacting said second electrode; the improvement which comprises:
interposing a film layer of an oxidation-reduction polymer in contact with and between said electrolyte layer and said second electrode, wherein
said film of the oxidation-reduction polymer contains an oxidized form (Ox) and a reduced form (Red) of compounds which produce on said second electrode a reversible oxidation-reduction reaction of the following type:

$$Red \rightleftharpoons Ox + me,$$

where
e is an electron, and
m is the quantity of electrons involved in the reaction, with an exchange of electrons by means of said second electrode, and also containing compounds which are sources of cations similar to cations of said electrolyte layer.

4,272,164

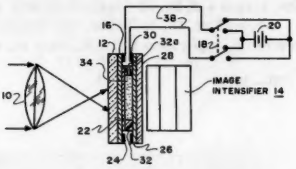
BRIGHT SOURCE ATTENUATING DEVICE FOR AN IMAGE INTENSIFIER

Charlie W. Trussell, Jr., Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 22, 1979, Ser. No. 51,463
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **20 Claims**

1. A bright source attenuating device for automatically attenuating bright sources in the image plane of an image intensifier, said device comprising:
two light transparent conductive means;
a photoconductor coating deposited on one side of one of said two light transparent conductive means;

an insulating spacer ring that forms a cavity between said two light transparent conductive means wherein said photoconductor coating is on the inner wall of said cavity;
an electrochromic material filling the entire volume of said cavity; and
a voltage source switchably connected across said two light transparent conductive means with the negative side of said voltage source connected to the one of said two light transparent conductive means upon which said photoconductor coating is deposited wherein said device remains



transparent to low energy light levels but wherein a bright light focused on said device causes said photoconductor coating to conduct at the point where said bright light is focused while simultaneously said electrochromic material deposits an internal dye to create a dark point at said point of conduction on said photoconductor coating in which said dye absorbs said bright light portion of the image whereby the removal of said bright light causes current flow to cease through said electrochromic material and said dark point to become transparent again.

4,272,165

OPTICAL SYSTEM FOR ILLUMINATING THE GROUND OF THE EYE

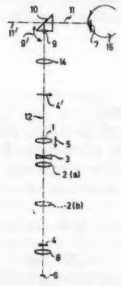
Franz Muchel, Konigsbronn, and Albrecht Vogel, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Wuerttenberg, Fed. Rep. of Germany

Filed Jan. 10, 1978, Ser. No. 868,460

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703723

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—13 **4 Claims**



1. In an optical system for illuminating the ground of a patient's eye and for forming the image of a test mark thereon, in which system a collector and a test mark are provided in the path of light along an optical axis and between a source of light and an opthalmological objective, and in which system an imaging system is displaceably positioned along the optical axis between the test mark and the opthalmological objective, the improvement in which the displaceable imaging system comprises (a) a two-lens system comprising a condensing lens and a diverging lens and forming an image of the test mark at infinity, whereby by displacing the condensing lens along the optical axis, the image scale may be varied, and (b) a further condensing lens arranged in the parallel beam of light behind said two-lens system and so dimensioned that upon its axial displacement a change in the axial position of the image is affected without changing the image scale.

4,272,166

TEMPLES FOR EYEGLASSES

Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,814

Int. Cl.³ G02C *5/14, 5/18*

U.S. Cl. 351—111 **1 Claim**

1. A temple unit for eyeglasses comprising:
a rod of permanently but elastically flexible metal damask in the area of a wearer's ear having a temple area end and a free end,
a thin sheath of a very soft material of silicone rubber seated axially motionless on said rod,
said sheath having a very low restoring force so that said unit exhibits a straight rod form in its semifinished state
said sheath having a Shore-D-Hardness below 20 measured according to DIN 53 505,
said sheath having a tear-shaped thickening at its free end.

4,272,167

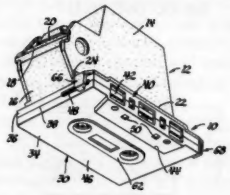
PROJECTOR CARTRIDGE FOR A FILMSTRIP AND A TAPE CASSETTE

Fred G. Kempster, 44046 Yorkshire, Canton, Mich. 48187

Filed Nov. 15, 1978, Ser. No. 960,794

Int. Cl.³ G03B *31/04*

U.S. Cl. 353—120 **3 Claims**



1. In a projection cartridge for holding a filmstrip and a tape cassette, said cartridge being of the type comprising a base including a mounting plate, a housing mounted on one side of the plate and being adapted to receive a filmstrip and having guide means for guiding the movement of the filmstrip into and out of the housing at a predetermined location relative to said base, the other side of said plate including positioning means and being adapted to receive a tape cassette in a predetermined position relative to said base with the tape head of the cassette coacting with said positioning means, and retaining means for releasably attaching the cassette to the base, the improvement wherein said retaining means comprises a first cam-actuated spring retaining hook mounted on one end of the plate for engaging one end of the cassette and a second cam-actuated spring retaining hook mounted on the other end of the plate for engaging the other end of the cassette, each of said retaining hooks comprising a cantilever arm extending from said plate perpendicular thereto and being integral therewith, each of said cantilever arms having an inwardly projecting nose for camming engagement with a shoulder on said cassette when the cassette is moved toward and away from said plate, whereby the cassette may be attached to said base by pressing it toward the plate in alignment with the positioning means and

may be released from the base by pulling it away from said plate.

4,272,168

PHOTOGRAPHIC CAMERA OF AUTOMATIC EXPOSURE CONTROL TYPE

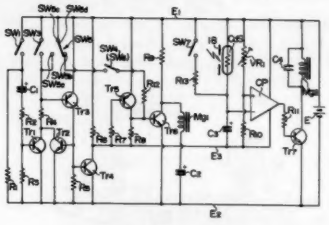
Yoshihisa Maitani, and Katsuhiko Tsunefuji, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 59,078

Claims priority, application Japan, Sep. 8, 1978, 53/110383; Sep. 8, 1978, 53/110384

Int. Cl.³ G03B *7/083, 17/04, 17/38*

U.S. Cl. 354—51 **22 Claims**



1. A photographic camera of an automatic exposure control type, said camera comprising a camera body, a taking lens disposed on said camera body, a rear lid disposed on said camera body, a film winding mechanism disposed in said camera body, an electrical shutter of the electromagnetic release type including an electrical shutter circuit, a front cover slidably disposed across the front surface of said camera body between a first position in which it closes said taking lens and a second position in which it exposes the taking lens; a first switch which is turned on and off in accordance with the position of the front cover, a second switch which is turned on and off as said rear lid of the camera is opened or closed, a third switch which is changed over in accordance with the operation of said film winding mechanism and the operation of said electrical shutter, and means for coupling said switches to said electrical shutter circuit for providing that a shutter release operation is disabled when the front cover is in its first position to disable a photographing operation but for enabling a high speed shutter operation in response to completion of the film winding operation whenever the rear lid of the camera is opened and the front cover is in the first position.

4,272,169

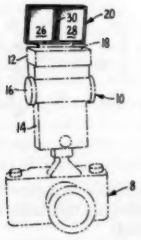
BOUNCE FLASH APPARATUS

Kenneth Stone, P.O. Box G, Boulder Creek, Calif. 95006

Filed Jul. 28, 1980, Ser. No. 172,527

Int. Cl.³ G03B *15/02*

U.S. Cl. 354—126 **2 Claims**



1. A bounce light reflector for a flash gun wherein said flash gun has a light emitting surface aimed at right angles to a subject comprising in combination:

a. reflector having two reflective surfaces, generally equally sized,

b. said reflective surfaces being in side by side relationship and being separated by a narrow, non-reflective stripe and,

c. means for mounting said reflector onto said flash gun whereby the surface of said reflector is held at an angle to the light emitting surface of said flash gun.

4,272,170

PHOTOGRAPHIC ARRANGEMENT USING VARIOUS ELECTRONIC FLASH DEVICES

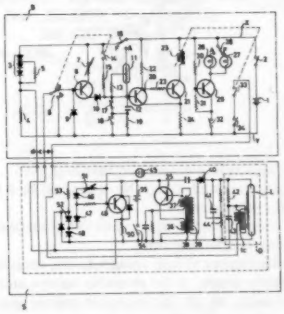
Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 784,524, Apr. 4, 1977, abandoned, which is a continuation of Ser. No. 579,881, May 22, 1975, abandoned, which is a continuation of Ser. No. 89,262, Nov. 13, 1970, abandoned. This application Mar. 26, 1979, Ser. No. 23,776

Claims priority, application Japan, Nov. 20, 1969, 44-110347; Nov. 20, 1969, 44-110348; Nov. 20, 1969, 44-110349; Dec. 25, 1969, 44-103914

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—149 **14 Claims**



1. A photographic flash system comprising:

(A) a first electronic flash device including: a flash tube, capacitor means coupled to the tube for storing electrical energy to sustain a flash in said flash tube, charger means connected to said capacitor means for charging said capacitor means, and detecting means connected to said capacitor means for generating a control signal when the charge of the capacitor means has reached a predetermined value,

(B) a second electronic flash device including: a flash tube, capacitor means coupled to the tube for storing electrical energy to sustain a flash in said flash tube, and charger means connected to said capacitor means for charging said capacitor means, and

(C) a photographic camera, comprising a shutter speed forming circuit and a control circuit connected to an output terminal of said shutter speed forming circuit so as to control an exposure value in correspondence to an output signal from said shutter speed forming circuit,

said shutter speed forming circuit including:

first means having first exposure parameter means for generating an output signal corresponding to a shutter speed suitable for the first electronic flash device, and semiconductive switching means for enabling the first exposure parameter means in the shutter speed forming circuit in response to the control signal from said detecting means when the first electronic flash device is attached on the photographic camera,

second means having second exposure parameter means for generating a second output signal corresponding to a shutter speed suitable for the second electronic flash device, and selecting switch means for enabling the second exposure parameter means and for disabling the first exposure parameter means when the second electronic flash device is used with the camera, the selecting switch means and the semiconductive switching means being operable alternately so as to allow the shutter speed forming circuit to produce only one of a first output and a second output so that a flash produced by the first flash device and the second flash device is based on the shutter speed determined by the first parameter means and the second parameter means respectively.

4,272,171

SINGLE-LENS REFLEX CAMERA

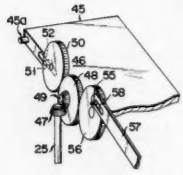
Akihiko Hashimoto, Hachioji; Tamotsu Koiwai, Akikawa; Isao Kondo, and Toyohiko Kimura, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 85,920

Claims priority, application Japan, Oct. 27, 1978, 53-132363

Int. Cl.[3] G03B *19/12, 1/12*

U.S. Cl. 354—152 **11 Claims**



1. A single-lens reflex camera comprising:

a rotary means rotated when the operation of a focal plane shutter is commenced;

a movable mirror rotated upward to the prescribed position;

a stop-driving mechanism; and

a control mechanism which transmits the rotation moment of the rotary means to the movable mirror and stop-driving mechanism to lift the movable mirror and, after the movable mirror is lifted, to actuate the strop-driving mechanism in the stop-down mode,

said control mechanism comprising

first and second cams,

a first pin cooperable with the first cam, and

a second pin cooperable with the second cam;

the first cam being mounted on one of the rotary means and the movable mirror, and the first pin being mounted on the other one,

the second cam being mounted on one of the rotary means and the stop-driving mechanism, and the second pin being mounted on the other one, and

the first and second cams being so shaped that the stop-driving mechanism is actuated in the stop-down mode after the movable mirror is lifted.

4,272,172

APPARATUS FOR MAKING PHOTOGRAPHIC PICTURES

Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Filed Apr. 2, 1979, Ser. No. 25,946

Claims priority, application Switzerland, Apr. 7, 1978, 3749/78

Int. Cl.[3] G03B *17/44*

U.S. Cl. 354—161 **8 Claims**

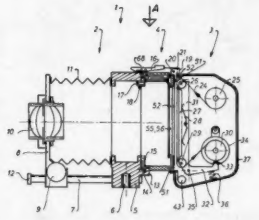
1. Apparatus for making a photographic picture on a film which is exposable in a film plane, said apparatus comprising:

a first housing; an objective in said first housing; an optical pathway through said first housing and through said objective thereof;

an intermediate housing, separably attachable to and separable from said first housing; said film plane being generally at said intermediate housing; said intermediate housing also having an optical pathway therethrough to said film plane;

said first and said intermediate housings together defining an optical pathway for optical communication between said objective and said film plane;

said intermediate housing incuding mask positioning means for positioning a mask generally in said film plane for intercepting light from said objective; said intermediate housing including shutter means positioned between said mask positioning means and said objective;



said intermediate housing further including a rear cover on the side of said mask positioning means away from said objective, and said cover being adapted to be separably attached to and to be separated from yet another part of said apparatus; and

said another part of said apparatus being adapted to be separably attached to and to be separated from said intermediate housing cover at the side of said mask positioning means away from said objective, said another part of said housing being supported on said intermediate housing and not on said first housing, whereby upon separation of said intermediate housing from said first housing said another part of said apparatus stays with said intermediate housing.

4,272,173

MOTOR DRIVE UNIT FOR CAMERA HAVING VARIABLE WINDING SPEED CHARACTERISTICS

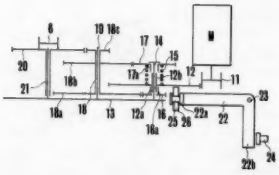
Tomonori Iwashita, Fuchu; Hidehiko Fukahori, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,623

Claims priority, application Japan, Jul. 25, 1978, 53-90589

Int. Cl.[3] G03B *1/18*

U.S. Cl. 354—173 **7 Claims**



1. An automatic winding-up device having an electric motor for performing winding-up operation by the driving force of said motor, comprising:

(a) driven winding-up means;

(b) motion transmitting means for drivingly connect said motor with said driven winding-up means, said motion

transmitting means having two different transfer factors, one being a value at which said motor produces a torque of a maximum efficiency or a torque close thereto and the other being a value at which the motor produces a maximum output torque or a torque close thereto; and

(c) selecting means operatively connected to said motor transmitting means for selecting either of said two transfer factors.

4,272,174

AUTOMATIC AND MANUAL FOCUS CONTROL LENS BARREL STRUCTURE

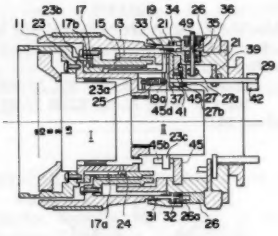
Tougo Teramoto, Wakayama; Shuzo Matsushita, Ikeda, and Toshio Kobori, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 96,731, Nov. 23, 1979, abandoned. This application Nov. 26, 1979, Ser. No. 97,236

Claims priority, application Japan, Nov. 25, 1978, 53-145502; Nov. 25, 1978, 53-145503; Apr. 30, 1979, 54-53663

Int. Cl.³ G03B *3/02, 7/08*

U.S. Cl. 354—195 **13 Claims**



6. A lens barrel for automatic and manual focus control of a camera, comprising:

a non-movable barrel for holding the whole lens barrel;

a movable barrel for carrying at least one lens group for focussing by means of its axial movement;

first means for shifting said movable barrel along the optical axis of said at least one lens group relative to said non-movable barrel in accordance with manual focus control operation; and

second means for shifting said movable barrel along said optical axis relative to said non-movable barrel in accordance with automatic focus control operation, said second shifting means being independently operable from said first shifting means to shift said movable barrel without movement of said first shifting means.

4,272,175

AUTOMATIC APERTURE CONTROL DEVICE

Zenichi Okura, Oomiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

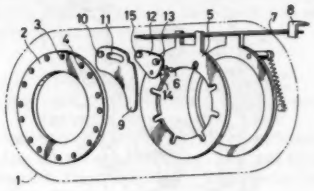
Filed Oct. 31, 1979, Ser. No. 89,798

Claims priority, application Japan, Nov. 14, 1978, 53-140001

Int. Cl.³ G03B *9/06*

U.S. Cl. 354—274 **6 Claims**

1. An automatic aperture control device in a lens barrel in which the aperture value is controlled in accordance with the stop position of an automatic aperture control member in a camera comprising: pairs of aperture blades and intermediate levers pivotally mounted on a supporting ring, a first drive shaft fixedly secured to each intermediate lever operatively coupled to an opening and closing ring turned by said automatic aperture control member of said camera, and a second drive shaft fixedly secured to each intermediate lever slidably mounted in an elongated groove formed in each aperture blade to operate each aperture blade through each intermediate lever, said elongated groove shape defined by the locus of



movement of said second drive shaft as it is actuated by said opening and closing ring to define a range of stop positions.

4,272,176

CAMERA HAVING AN ACOUSTIC INDICATOR FOR GENERATING SOUNDS TO INDICATE THE STATUS OF CERTAIN OPERATING CONDITIONS

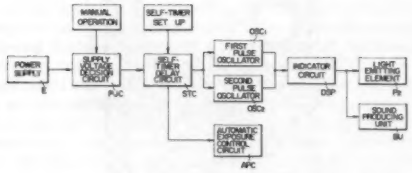
Yoshihisa Maitani; Isao Kondo; Kazuyuki Nemoto, and Masahiro Kitagawa, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,851

Claims priority, application Japan, Nov. 15, 1977, 52-153242[U]; Nov. 22, 1977, 52-157047[U]

Int. Cl.³ G03B *17/20, 17/40*

U.S. Cl. 354—238 **5 Claims**



1. A camera for use with a power supply providing a supply voltage; said camera comprising an electrically controlled shutter means adapted to be operated from the power supply; a self-timer delay circuit operative for delaying the operation of said electrically controlled shutter means for a given time interval; a single acoustic indicator including a single common acoustic speaker comprising first means for producing a first sound when the supply voltage is above a selected level and second means for producing a second sound different from said first sound responsive to the operation of said self-timer delay circuit.

4,272,177

MULTIPLE CAMERA MOUNTING BRACKET

Charles J. Ottenheimer, 2454 Paradise Village Way, Las Vegas, Nev. 89120

Filed May 27, 1980, Ser. No. 153,446

Int. Cl.³ G03B *17/56*

U.S. Cl. 354—293 **12 Claims**

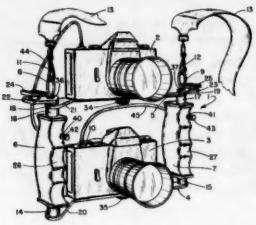
1. Apparatus for mounting photographic equipment comprising

(a) a first mounting shelf,

(b) a second mounting shelf spaced from and substantially parallel to the first mounting shelf,

(c) said first and second mounting shelves each comprising a flat elongated member having an end portion angled from between about 10° and about 90° with respect to said member,

(d) first and second mounting means for removably securing a camera to each mounting shelf, and



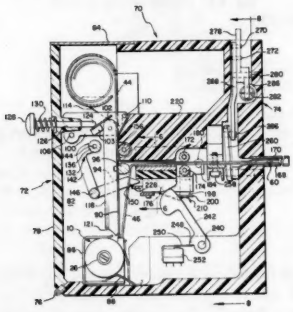
(e) a pair of spaced parallel hand grips fastened between the mounting shelves.

4,272,178

PROCESSING APPARATUS FOR SELF-DEVELOPING TYPE ROLL FILM

Leonard V. Bendoni, Framingham, and Hugh L. Smith, Brockton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1980, Ser. No. 136,802
Int. Cl.[3] G03D *5/02*
U.S. Cl. 354—298 **7 Claims**



1. Apparatus for processing an elongate composite film structure of the self-developing transparency type so as to initiate the formation of a visible image therein comprising:

means for supporting a film assemblage including a cylindrical film cassette having an exit slot and a reel upon which an elongate composite film structure is wound, the composite film structure including a first sheet having first and second opposite ends and including therebetween a given length of photographically exposed self-developing transparency type film, a second sheet having a first end secured to a reel located within a film cassette, a second end located in superposed relation to the second end of the first sheet, and an intermediate portion secured to the first sheet at a location closely adjacent to the second end of the first sheet, and a container of processing liquid secured to one of the facing surfaces of the second ends of the first and second sheets;

a chamber having an opening for receiving the first end of the first sheet;

a first pair of rollers adapted to receive the first sheet therebetween;

a spread roller assembly including a second pair of rollers;

means for mounting one of the rollers of said second pair of rollers for movement between an inoperative position wherein said one roller of said second pair is spaced from the other roller of said second pair, and an operative position wherein said one roller is located closely adjacent to said other roller;

a motor for driving one of the rollers of said first pair of rollers in a direction so as to fully withdraw the first sheet and the second end of the second sheet from the film cassette while simultaneously advancing portions of the first sheet into said chamber;

means for disabling said motor to drive said one roller of said first pair in said direction when the second ends of the first and second sheets are located between said one and said other rollers of said second pair when said one roller is located in said inoperative position; and

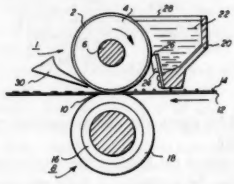
means for energizing said motor, when said one roller of said second pair is moved into said operative position so as to drive one of the rollers of said second pair in a direction to advance the ends of the first and second sheets away from said second pair while simultaneously rupturing the container of processing liquid located between the second ends and spreading its contents between and in engagement with the first and second sheets as they are advanced in superposition between the rollers of said second pair.

4,272,179

METAL-FILLED ELASTOMER FUSER MEMBER

Donald A. Seanor, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 26,989
Int. Cl.[3] B05C *11/02*; B21B *31/08*
U.S. Cl. 355—3 FU **56 Claims**



45. In a heated pressure fusing system for fusing toner images in an electrostatic reproducing apparatus in which a fuser roll and a backup roll define a contact arc to fuse toner images onto a substrate and a release agent is applied to the surface of the fuser roll to prevent toner offset from the fuser roll, the improvement comprising a fuser roll having an elastomer surface with metal-containing filler dispersed therein and the release agent applied upon the surface of the elastomer being a polymeric release agent having functional groups which interact with the metal in the filler.

4,272,180

ELECTROSTATIC COPYING MACHINE

Toyokazu Satomi; Yutaka Koizumi; Isao Nakamura; Yasuhiro Tabata, and Tamaki Kaneko, all of Tokyo, Japan, assignors to Ricon Co., Ltd., Tokyo, Japan

Division of Ser. No. 884,137, Mar. 7, 1978, Pat. No. 4,187,024. This application May 24, 1979, Ser. No. 42,058
Claims priority, application Japan, Mar. 9, 1977, 52-25769; Apr. 6, 1977, 52-39190
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 SH **3 Claims**

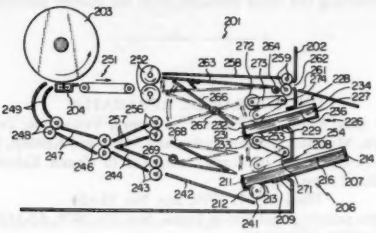
1. In an electrostatic copying machine having a moving photoconductive member and means for forming first and second toner images of first and second original documents respectively on the photoconductive member, the combination comprising:

first and second sheet holders for initially holding first and second copy sheets of first and second sizes respectively, the first and second sizes being different;

first and second intermediate sheet holders for temporarily holding the first and second copy sheets respectively;

selector means for selecting one of the first and second copy sheets; and

feed means for feeding said selected copy sheet from the respective sheet holder into engagement with the photoconductive member to transfer the first toner image onto



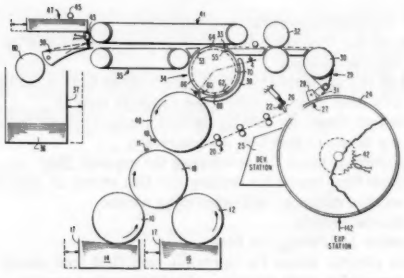
a first side of said selected copy sheet, feeding said selected copy sheet onto the respective intermediate sheet holder and subsequently feeding said selected copy sheet from the respective intermediate sheet holder into engagement with the photoconductive member to transfer the second toner image onto a second side of said selected copy sheet.

4,272,181

ELECTROPHOTOGRAPHIC PRINTER WITH DUPLEX PRINTED SHEET OUTPUT

Robert C. Treseder, Aptos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,585
Int. Cl.[3] G03G *15/00*; B65H *29/00*
U.S. Cl. 355—14 SH **14 Claims**



1. A duplex printer comprising:

means for printing an image on one side of a print sheet;

first sheet feeding means for moving print sheets in sequence to said means for printing, said first sheet feeding means including a first selectively actuable feed means;

second sheet feeding means for continuously moving print sheets in sequence from said means for printing to an output station; said second sheet feeding means including a second selectively actuable feed means in said path and means for producing a fixed image on said print sheet prior to said second selectively actuable feed means;

third sheet feeding means for continuously moving print sheets from said second selectively actuable feed means to said first selectively actuable feed means;

means for selectively actuating said second selectively actuable feed means when said print sheet is in a predetermined position in said second sheet feeding means to move said print sheet to said third sheet feeding means; and

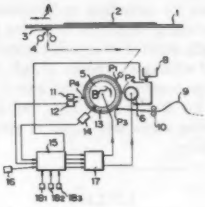
means for energizing said first selectively actuable feed means to feed said print sheet to said means for printing to receive a duplex image on the side of said print sheet opposite to said one side.

4,272,182

APPARATUS FOR CONTROLLING THE DENSITY OF A REPRODUCED IMAGE IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE

Shunichi Abe; Mistuo Akiyama; Fumio Iwai, and Hiroshi Kuru, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,060
Claims priority, application Japan, Jan. 17, 1978, 53-2756
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 D **5 Claims**



1. In an apparatus for controlling the density of a reproduced image of an original to be copied in an electrophotographic copying machine comprising a copy board; an electrophotosensitive medium; an optical system positioned between the copy board and the electrophotosensitive medium for forming an electrostatic image of the original on the medium; a developing device for changing the electrostatic image to a visible toner image; first means for controlling a toner concentration, the first means comprising a patch of predetermined uniform demsity disposed at a location remote from the original to be copied and adapted for forming, in conjunction with the optical system and developing device, a toner image of the patch on the electrophotosensitive medium, and a detector for measuring the density of the patch toner image and for generating an output signal for controlling a toner concentration; and second means for controlling a bias between the developing device and the electrophotosensitive medium for controlling the density of the reproduced image, the improvement comprising:

third means for fixing the bias at a predetermined value at least during development of the patch toner image and for fixing the bias at a selectable value at least during development of the original image.

4,272,183

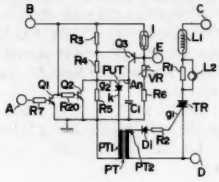
CONTROL SYSTEM RESPONSIVE TO ERASER MALFUNCTIONS IN ELECTROPHOTOGRAPHIC COPYING MACHINES

Masayuki Maese, and Tsuyoshi Nakakami, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1979, Ser. No. 50,529
Claims priority, application Japan, Jun. 21, 1978, 53-86070[U]
Int. Cl.[3] G03G *15/22*
U.S. Cl. 355—14 R **7 Claims**

1. In an electrostatic copying apparatus having at least a movable photoconductive member, charging means for uniformly charging the surface of the photoconductive member, exposing means for exposing a light image of an original to the charged surface of the photoconductive member and for form-

ing an electrostatic latent image on the surface of the photoconductive member, transfer means for transferring the image formed on the surface of the photoconductive member to a copying paper, an erasing lamp between the transferring means and the charging means for erasing residual charges on the surface of the photoconductive member, and controlling means for controlling at least an operation of the charging means, said controlling means comprising:



detecting means for detecting malfunction of said erasing lamp and including means for detecting a variation in the amount of light emitted from said erasing lamp and generating a signal when said amount of light fails to assure the desired charge erasing operation; and

circuit means for disabling at least the operation of said charging means when said signal is generated from said detecting means.

4,272,184

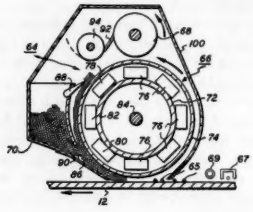
CONDUCTIVE CARRIER FOR MAGNETIC BRUSH CLEANER

Ivan Rezanka, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 80,762

Int. Cl.[3] G03G *21/00*

U.S. Cl. 355—15 **11 Claims**



1. A magnetic brush cleaning system for removing residual toner particles from a photoreceptor surface in an electrostatographic copying/duplicating machine, said cleaning system comprising;

(a) a magnetic brush roll adapted to rotate counter to the direction of movement of said photoreceptor surface positioned adjacent to the area of the photoreceptor surface to be cleaned and containing a plurality of magnets located inside the magnetic brush roll;

(b) a plurality of magnetic, electrically conductive carrier particles having a resistivity of less than about 10^{10} ohm-cm and a triboelectric charging response of at least about 15 microcoulombs per gram of said toner particles magnetically adhering to said magnetic brush roll;

(c) a toner reclaim roll adapted to rotate counter to the direction of said magnetic brush roll positioned adjacent to the path of said magnetic brush roll so as to contact the carrier particles having toner particles thereon;

(d) a scraper means positioned in contact with said toner reclaim roll to remove toner particles from said toner reclaim roll;

(e) a transporting means in contact with said scraper means for disposal of said toner particles;

(f) means for electrically biasing the magnetic brush roll to a voltage of between about 50 volts and about 400 volts to assist in attracting the residual toner particles from the photoreceptor and onto the carrier particles; and

(g) means for electrically biasing the toner reclaim roll to a negative polarity of up to about 400 volts to assist in removing the toner particles from the carrier particles.

4,272,185

PHOTOGRAPHIC APPARATUS

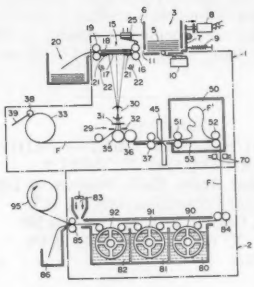
Toshio Arai, Kawasaki; Takeshi Nagasawa, Yokohama; Toshio Iwaya, Machida; Shunzo Inoue, and Motofumi Konishi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,424

Claims priority, application Japan, Sep. 14, 1978, 53-113032; Sep. 14, 1978, 53-113037

Int. Cl.[3] G03B *29/00*

U.S. Cl. 355—28 **15 Claims**



1. A recording apparatus comprising:

means for recording images on a long film located at an exposure station;

a film storage means for storing the exposed film, in the form of a loop, conveyed from the exposure station;

first feed means for feeding the film exposed by said recording means to said film storage means;

developing means for developing the exposed film;

second feed means for feeding the film stored in said film storage means to said developing means;

a manual switch;

a cutter for cutting the film;

first control means for operating said first feed means in association with operation of said recording means;

second control means, associated with said manual switch, for operating said first feed means to feed the film through a predetermined length;

a detector, downstream of said second feed means with respect to movement of the film, for detecting the presence of the film;

means for operating said second feed means in conjunction with the operation of said recording means until said film detector detects the film;

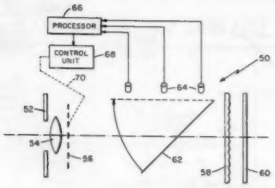
means for operating said cutter to separate the exposed portion of the film from the unexposed portion, when said first feed means feeds the film through a predetermined length; and

third control means for operating said second feed means to continuously feed the film independently of the operation of said recording means after operation of said manual switch.

4,272,186
CAMERA METHOD AND APPARATUS FOR RECORDING WITH SELECTED CONTRAST

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 21, 1979, Ser. No. 40,668
Int. Cl.[3] G03B 27/52, 27/72
U.S. Cl. 355—34 42 Claims



1. Camera apparatus for image recording with reduced contrast, said apparatus having support means for receiving an image recording medium at an image surface and having a lens aligned along an optical axis for directing light from a field of view along an optical path to the image surface, and further comprising

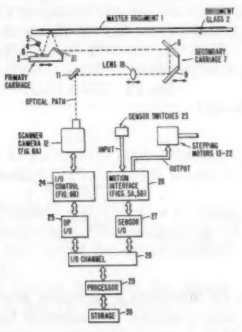
A. light-distributing means arranged in the optical path between said lens and said image surface for modulating the distribution of image light from the lens across the image surface for effectively dividing the image surface into microscopic portions, different ones of which receive relatively increased exposure and others of which receive relatively lesser exposure, than in the absence thereof, from the image light, and

B. aperture means interposed in said optical path anterior to said distributing means for illuminating said distributing means with image light to separate said image-surface portions of increased exposure spaced relative to one another to form portions of lesser exposure therebetween.

4,272,187
AUTOMATIC ALIGNMENT OF OPTICAL ELEMENTS IN AN ELECTROPHOTOGRAPHIC APPARATUS

Ivan P. Birdsall, Boulder; Paul J. Bradmon, Longmont; Donald L. Buddington, Boulder; Vincent H. Garcia, Berthoud, and Don S. Nelson, Arvada, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,255
Int. Cl.[3] G03B 27/34, 27/40
U.S. Cl. 355—56 28 Claims



1. Apparatus for optimumly adjusting the optical elements of a copier to positions forming images of lines, on an illuminated target background, which have the greatest background-to-line illumination contrast, where the invention comprises:

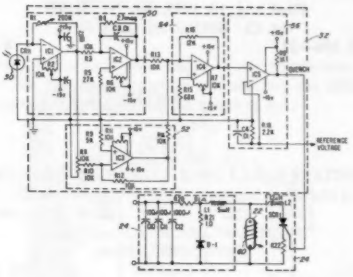
an electronic scanner, operable to repeatedly examine the same target line images and generate, for each line, signals manifesting the amount of light reflected by that line relative to the target background; and

driving devices, for positioning the copier optical elements during repeated operation of the scanner.

4,272,188
EXPOSURE COMPENSATION CIRCUIT FOR A COPIER

Richard F. Lehman, Fairport, and Stephen C. Corona, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1979, Ser. No. 77,237
Int. Cl.[3] G03B 27/72
U.S. Cl. 355—68 1 Claim



1. A flash illumination and document exposure system for a copying machine comprising:

a completely enclosed light housing having a first surface adapted to accommodate a document platen and a second surface to accommodate a lens for focusing a document image onto an image plane;

said housing having side walls joined to said first and second surfaces; said side walls having diffusely reflecting interior surface whereby said light housing functions as an integrating cavity;

at least one flash lamp mounted within said housing for illuminating said document;

a triggering circuit connected to said lamp for initiating flash discharge;

a power supply for providing a discharge pulse to said lamp whereby in conjunction with said triggering circuit, said flash lamp produces a light flash;

a photosensor mounted within said housing to detect illumination at a wall of said housing, and to generate an output signal which varies in accordance with impinging light;

a quench circuit connected to said lamp which, when upon receipt of a quench command signal, extinguishes said light flash;

circuit means for generating said quench command signal, said circuit means including;

integrating means responsive to said photosensor signal to continuously generate a first output signal proportional to the total amount of light impinging on said photosensor;

compensation means responsive to said photosensor signal to generate a second output signal representative of the light which would continue to impinge on said photosensor after said quench signal is applied to said lamp;

said compensation means including a resistive element which attenuates the gain of the signal from said integrating means to reflect the proportionally constant of said power supply and the integration constant of said integrating means, and an operational amplifier connected to said resistive element which inverts and further attenuates the signal;

summing means for combining said first and second signals

into a third signal representing the total pre and post quench energy expended by said lamp; and

comparator means for comparing said third signal against a predetermined reference signal representative of the desired exposure level, said comparator means generating said quench signal when said third signal equals said reference signal.

4,272,189

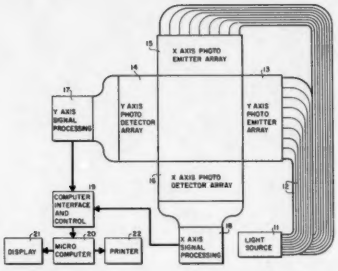
ELECTRO-OPTICAL PROJECTILE ANALYZER

Theodore B. Bailey, and Jack Bates, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1979, Ser. No. 67,089

Int. Cl.[3] G01P *3/36*; G01V *9/04*

U.S. Cl. 356—28 **8 Claims**



4. A projectile analyzer for determining the velocity, position, pitch, and yaw of a projectile comprising:

first and second linear arrays of emitter means for emitting continuous beams of light, said second linear array of emitter means perpendicular to said first linear array of emitter means, each emitter in said first means defining an optical path,

first and second linear arrays of detector means for detecting light corresponding to said first and second linear arrays of emitter means, respectively, each detector means responsive to a light beam from a corresponding emitter means and located in the optical path defined thereby;

first and second arrays of emitter polarizing filters located in the optical paths of said first and second linear arrays of emitter means, respectively, for polarizing the output of each said emitter means, said polarizing filters configured to provide perpendicular planes of polarization for adjacent emitter means;

first and second arrays of detector polarizing filters placed in the optical paths defined by said emitter means, with the plane of polarization of each detector polarizing filter the same as the plane of polarization of the corresponding emitter means; and

first and second processing means connected to said first and second linear arrays of detector means, respectively, for processing signals from each linear array of detector means, such that each detector means in an array transmits a signal when said detector means have an interruption of the light beam incident thereon and whereby the sequence and duration of interruption of light on the detector means within an array can be used to determine the velocity, position, and orientation of a projectile as it intercepts light beams to each array and where said perpendicular arrays have axes which define the directions of pitch and yaw.

4,272,190

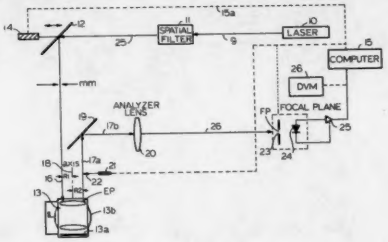
OPTICAL MEASURING SYSTEM

Alan R. Shapiro, Santa Monica, Calif., assignor to Typalogics, Santa Monica, Calif.

Filed Aug. 14, 1978, Ser. No. 933,465

Int. Cl.[3] G01B *9/00*

U.S. Cl. 356—124 **26 Claims**



1. Apparatus for determining the optical properties of a test object having an optical axis and light transmission properties between first and second spaced light transparent surfaces comprising:

means for generating a test beam of light parallel to the optical axis of said test object and directed at a point on said first surface, through said test object, and to said second spaced surface;

a reflector located adjacent said second spaced surface of said test object for reflecting all or part of said test beam back into and through said test object as a reflected beam;

means for determining the point at which said reflected beam exits said test object at said first surface; and

means for measuring the intensity of said reflected beam immediately after said reflected beam exits said first surface of said test object

whereby the reflected beam exit location and intensity constitute measures of the optical properties of said test object.

4,272,191

DEVICE FOR INDICATING A PARTICULAR ANGLE IN PIPELAYING WORK OR SIMILAR OPERATIONS

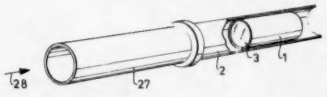
Lars A. Bergkvist, Gottne, 890 42 Mellansel, Sweden

Filed May 22, 1979, Ser. No. 41,416

Claims priority, application Sweden, May 31, 1978, 7806332

Int. Cl.[3] G01B *11/27*

U.S. Cl. 356—153 **6 Claims**

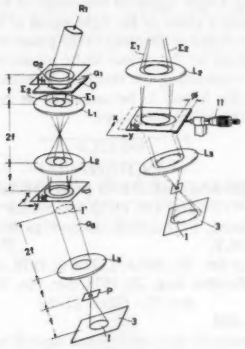


1. Device for indicating a particular angle or alignment in pipelaying work or similar, characterized by the fact that two screen units (3,4) comprising screens consisting of opaque lines (5) separated by transparent gaps (6) are at a certain distance from each other, where each screen's (3,4) opaque lines (5) are in the form of concentric circles, and by the fact that the concentric circles of the two screens (3,4) are mutually concentrically positioned.

4,272,192
HOLOGRAPHIC SHEARING INTERFERENCE CONTRAST METHOD AND INTERFEROMETER

Kiyofumi Matsuda, Musashi-Murayama, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Aug. 9, 1978, Ser. No. 932,180
Claims priority, application Japan, Aug. 13, 1977, 52/97227; Aug. 31, 1977, 52/104645
Int. Cl.³ G01B 9/02, 9/021; G02B 5/32
U.S. Cl. 356—347 **9 Claims**



1. A holographic shearing interference contrast method which comprises:

producing a first hologram by using interference fringes resulting from the interaction between a first reference beam and each of two incident beams having slightly different angles of incidence, and a second hologram by using interference fringes resulting from the interaction between a second reference beam and each of first order diffraction beams reproduced by illumination of the first hologram with a beam equivalent to the first reference beam;

placing a transparent phase object under observation between said first and second holograms arranged in the same positional relationship as in the producing of the holograms;

impinging upon said second hologram the first order diffraction beams reproduced by illumination of said first hologram with said beam equivalent to the first reference beam and passed through said object for thereby reproducing a first order diffraction beam of the second hologram; and

imparting a phase difference to said first order diffraction beam of the second hologram by laterally moving said second hologram a small displacement so as to provide a visible image having a three-dimensional illusion on an observation plane.

4,272,193
METHOD AND APPARATUS FOR TIMING OF LASER BEAMS IN A MULTIPLE LASER BEAM FUSION SYSTEM

Jay M. Eastman, Pittsford, and Theodore L. Miller, Rochester, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

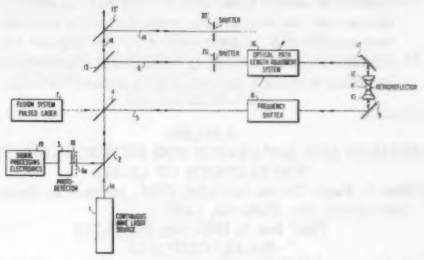
Filed Apr. 13, 1979, Ser. No. 30,044
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 **10 Claims**

3. A method for timing a comparison beam and a master beam of partially coherent electromagnetic radiation of the same frequency and finite bandwidth comprising:

shifting the frequency of the master beam relative to that of the comparison beam;

combining the two beams to produce an optical heterodyne interference pattern which is indicative of the difference in optical path lengths of the beams;

detecting the interference pattern of the combined beams; and

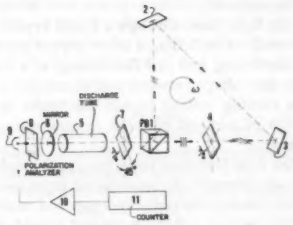


adjusting the optical path length of the comparison beam until the interference pattern indicates that the difference in optical path lengths of the beams is zero.

4,272,194
ROTATION SENSITIVE RING LASER SYSTEM

John G. Gievers, Rochester, Mich., assignor to Christa L. Gievers, Rochester, Mich.

Filed Sep. 5, 1978, Ser. No. 939,250
Int. Cl.³ G01C 19/64
U.S. Cl. 356—350 **22 Claims**



1. A rotation sensitive ring laser system comprising

a laser gain medium,

a partially transparent end mirror positioned on one side of said laser gain medium,

a splitting and reunifying device positioned on the opposite side of said laser gain medium for splitting a beam of polarized light from said laser gain medium into two orthogonal linear polarized components comprising an ordinary ray and an extraordinary ray, and for reunifying said components,

a plurality of means defining reflective surfaces positioned in a manner such as to provide an optical loop defining a closed path for said components of light to transit in opposite directions,

said splitting and reunifying device being positioned in said loop,

said laser gain medium being positioned externally of said loop and directing light to the splitting and reunifying device and receiving light from the splitting and reunifying device,

and means between the gain medium and the splitting and reunifying device for converting the light emanating from the loop that has been circularly polarized in response to rotation of the loop in inertial space into linearly polarized light, the plane of oscillation of which is rotating at an angular rate proportional to the angular rate with which the system is rotating in inertial space, and for converting said previously converted linearly polarized light as it

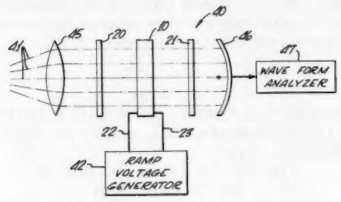
returns from said laser gain medium into circularly polarized light rotating in the opposite direction from the circularly polarized light emanating from the loop such that each component of light which is circularly polarized by rotation in inertial space always travels in the same direction around the loop and the phase shift angle between the two components of light caused by the angular rate at which the system is rotating in inertial space successively increases with each successive path around the loop.

4,272,195

METHOD AND APPARATUS FOR DETERMINING THE WAVELENGTH OF LIGHT

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 5, 1979, Ser. No. 45,722
Int. Cl.³ G02F 1/13
U.S. Cl. 356—368 **10 Claims**



1. A method of determining the wavelength of a light beam comprising the steps of:

directing the light beam through a liquid crystal cell, said liquid crystal cell including a liquid crystal material and a pair of electrodes, said cell functioning as a variable retarder as the voltage between said electrodes is varied;

applying a varying voltage to said electrodes to vary the retardation of said cell between its maximum and minimum values;

detecting the light from said beam passing through said cell;

monitoring the intensity of said detected light, said intensity alternately passing through maximum and minimum values as said varying voltage is applied to said electrodes; and

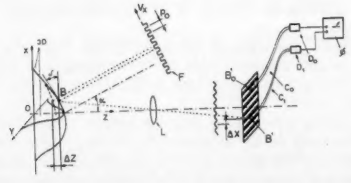
determining the number of times said intensity alternates between said maximum and minimum values as said retardation of said cell is varied between its maximum and minimum values.

4,272,196

OPTICAL SIZING MASK AND PROCESS

Guy Indebetouw, Blacksburg, Va., assignor to Lasag S.A., Thun, Switzerland

Filed Jan. 12, 1979, Ser. No. 3,027
Int. Cl.³ G01B 11/30
U.S. Cl. 356—371 **12 Claims**



10. An optical measuring process for determining the absolute size of an object as compared to a reference object comprising the steps of:

(a) projecting a group of regular interference fringes in uniform linear translation toward the reference object;

(b) observing by an optical system non-perpendicular to the direction of projection of the fringes an image formed by the fringes projected by the reference object;

(c) detecting a light signal of the image at a point;

(d) projecting the group of regular interference fringes in uniform linear translation toward the object to be measured;

(e) observing by the optical system an image formed by the fringes projected by the object to be measured;

(f) detecting a light signal of the image at a point; and

(g) comparing a phase of the light signal of the image of the reference object at the point to the phase of the light signal of the image of the object to be measured at the point, thereby determining the absolute difference in size at the point of the object to be measured as compared to the point of the reference object.

4,272,197

APPARATUS AND METHOD FOR MEASURING THE RATIO OF TWO SIGNALS

Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 866,651, Jan. 3, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,514
Int. Cl.³ G01N 21/59
U.S. Cl. 356—434 **9 Claims**

1. An apparatus for determining the ratio of two signals each at a continuous amplitude level comprising:

means for chopping one of said signals;

means for combining the chopped one signal and the other signal to generate a composite signal;

means for logarithmically amplifying said composite signal to produce an output signal having an alternating amplitude level component and a continuous amplitude level component, said alternating amplitude level component being a function of the ratio of said two signals; and

means for producing an output manifesting the amplitude of the alternating amplitude level component of said output signal

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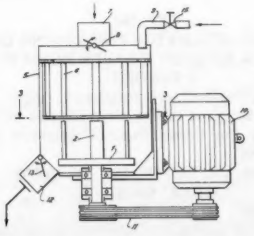
4,272,198

DEVICE FOR THE DISPERSION OF CEMENT SOLUTIONS

Dancho N. Velikov, St. Zagora; Kancho T. Kanchev, Gabrovo; Stanislav A. Ivanov, Sofia; Ilye H. Ivanov, and Hristo D. Tepavicharov, both of Gabrovo, all of Bulgaria, assignors to VMEI (Vish Maschinno-Elektrotechnicheski Institute), Gabrovo, Bulgaria

Filed May 29, 1979, Ser. No. 43,011
Claims priority, application Bulgaria, May 26, 1978, 39860
Int. Cl.³ B28C 5/08
U.S. Cl. 366—65 **5 Claims**



1. A device for forming and dispersing cement solutions, comprising a vertical barrel, a wheel mounted to rotate about a vertical axis within the barrel generally coaxial thereof and

adjacent the bottom thereof, the wheel having a hub, a plurality of first blades mounted on the hub parallel to the axis of the wheel and spaced circularly of the hub, the first blades being wedgeshaped and having sharp edges on the portions thereof which lead during rotation of the wheel, means for feeding and water into the top of the barrel, fixed annular means in the upper part of the barrel coaxial with the wheel for directing the cement and water to the first blades on the wheel.

4,272,199

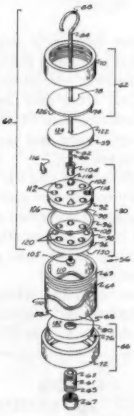
MIXING CONTAINER

Horace A. Hade, 6303 Valley Dr., R.R. #2, Grabill, Ind. 46741

Filed Feb. 27, 1976, Ser. No. 662,144

Int. Cl.³ B01F *7/00*

U.S. Cl. 366—130 **6 Claims**



1. A container for storing and mixing two or more incompatible materials, said container comprising an exterior container containing one material having top and bottom ends, at least one interior breakable container containing another material within said exterior container, a rotatable member within said exterior container, means for allowing said rotatable member to be positioned in surface to surface contact with one of said container ends, said rotatable member having thereon means for breaking said interior breakable container, said rotatable member also having thereon means for mixing said material of said breakable container with said material of said exterior container within said exterior container, nozzle means at said bottom end for dispensing said materials from said container, said container having an aperture in said top end, a shaft journaled in said aperture, one of said shaft ends being within said exterior container, said rotatable member including a top member and a bottom member, said bottom member being secured to said one shaft end, said top and bottom members each having a plurality of apertures therein, said breaking means including a plurality of spikes extending from said rotatable member toward said top end, whereby said materials can be essentially completely dispensed from said exterior container, and means engaging said spikes for holding said top member from rotation upon the rotation of said shaft and said bottom member.

4,272,200

HORN LOADED PIEZOELECTRIC MATRIX PRINTER DRIVE METHOD AND APPARATUS

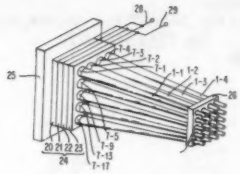
Walter H. Hehl, Steinenbronn, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,260

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756134

Int. Cl.³ B41J *3/10*

U.S. Cl. 400—124 **3 Claims**



1. Piezoelectrically operated drive apparatus for matrix printer elements, comprising:

a tapered, horn shaped body of material having a base surface input end and a surface output end located at opposite ends of said horn shaped body;

a piezoelectric crystal structure energizable by electric current attached to said base surface input end of said horn shaped body; and

means for applying controlled electrical pulses being of rectangular form and of controlled duration and applied in a plurality of steps in which the voltage level of said steps increases in amplitude to generate a controlled stroke response at the output end of said horn body.

4,272,201

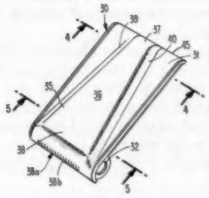
RIBBON SHAPER FOR TYPEWRITER CARTRIDGE

Donald J. Steger, Corinth, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,800

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **14 Claims**



1. In a ribbon cartridge for retaining and supporting a ribbon in a typewriter, said cartridge comprising spaced apart top and bottom walls and a side wall joining said top and bottom wall adjacent the periphery thereof to form a chamber, said side wall being discontinuous at predetermined locations to form at least entrance and exit apertures for a ribbon, and at least ribbon take up spool means in said chamber in communication with said ribbon entrance aperture; an improvement comprising: a ribbon shaper disposed intermediate said entrance aperture and said take up spool, said ribbon shaper comprising a longitudinally extending base portion extending inwardly into said chamber; an upstanding longitudinally diverging rib portion on the base portion, said rib portion including a planar upper surface which because of said divergence is frusto-triangular in plan, the narrower portion of said upper surface being closer to said entrance aperture than the wider portion; and

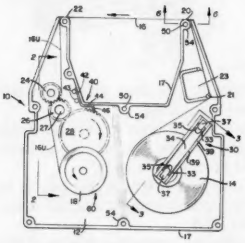
diverging side walls on said rib portion extending from said upper surface to said base portion whereby ribbon entering said entrance aperture tends to spread due to the pressure exerted against said rib and due to the divergence of said planar upper surface and the divergence of said side walls.

4,272,202

RIBBON CARTRIDGE WITH BROKEN UNIDIRECTIONAL FRICTION DRIVE AND SELF CLEANING GEARS

Marvin C. Schroeder, Missionviejo, and Edwin O. Stastny, Santa Ana, both of Calif., assignors to Data Card Corporation, Minneapolis, Minn.

Filed Sep. 20, 1978, Ser. No. 944,162
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—208 **18 Claims**



1. A cartridge for printing ribbon comprising:
a main panel member;
a secondary panel member;
means for interlocking said panel members together to form a container cartridge;
a printing ribbon supply rotatably mounted between said panel members;
brake means associated with said printing ribbon supply which is biased for engagement therewith whenever the cartridge is not in working position with a printing device in order to prevent inadvertent unwinding of the printing ribbon;
guiding means for said printing ribbon;
capstan feed means for said printing ribbon;
a take-up spool for used printing ribbon;
positive drive means between said capstan feed means and said take-up spool; and,
means for effecting a slip clutch function between said positive drive means and said take-up spool including a central hub member which is driven from said positive drive means, a deformed ring member supported by said central hub member, and an outer spool hub rotatably supported between said panel members and driven by friction engagement internally thereof by said deformed ring member.

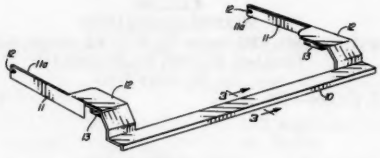
4,272,203

APPARATUS FOR ADAPTING AN OFFICE MACHINE TO ONE-HANDED OPERATION

Kenneth B. Diamond, and Lynda R. Diamond, both of 3102 W. Augusta, Phoenix, Ariz. 85021

Filed Feb. 21, 1979, Ser. No. 13,155
Int. Cl.³ B41J *25/08, 29/00*
U.S. Cl. 400—272 **1 Claim**

1. Apparatus for modifying a key-operated office machine, said machine including,
a plurality of finger-operated keys arranged to form a keyboard, and
a cabinet enclosing said machine, including means defining a horizontal edge of said cabinet extending across the rear of the keyboard,
said apparatus being quickly and conveniently installed on said office machine without requiring physical modification thereof and being arranged to permit selected ones of said keys to be manually depressed by a body member of the operator of said machine while simultaneously depressing one of the character keys, said apparatus comprising:
(a) a substantially rigid depressible bar member shaped and dimensioned to be operatively positioned horizontally across and below said keyboard;
(b) a pair of substantially rigid mounting arms attached to and extending perpendicularly to said bar member, each of said arms terminating in means shaped and dimensioned to detachably engage said horizontal edge of said machine cabinet, to position said bar member in said operative position and permit vertical movement thereof said arms shaped and dimensioned to pivot about said horizontal



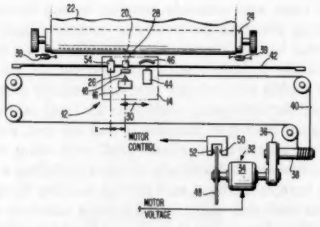
edge when said bar member is depressed and engaging said cabinet without structural modification thereof;
(c) a key depressor member operatively associated with said bar member and said arms, said depressor being located above at least a selected one of the keys of said office machine and operable when said bar member is depressed to depress said selected key;
(d) means for normally urging said bar member and said key depressor upwardly to prevent said key being depressed until downward pressure is exerted on the bar member by the operator, said elastic means attached to the key depressor and contacting said key and generating an upward force on said bar member; and
(e) said key depressor operable when said bar member is depressed to compress said elastic means, said elastic means depressing the key in contact therewith.

4,272,204

AUTOMATIC MARGIN DETERMINING APPARATUS FOR A SCANNED SHEET OF PAPER

Paul A. Quinn, Jr., and Walter J. Wipke, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,100
Int. Cl.³ B41J *21/02*
U.S. Cl. 400—342 **9 Claims**



1. An automatic margin determining apparatus for a typewriter including:
a platen for supporting a sheet of paper thereon;
a carrier having printing means thereon for printing indicia on the sheet of paper supported on said platen;

drive means for effecting relative movement between said carrier and said platen;

optical sensing means on said carrier for relative translation therewith;

means coupled to said sensing means for providing a first output signal indicative of the left edge of said sheet of paper and a second output signal indicative of the right edge of said sheet of paper upon relative translation of said carrier and platen;

means for producing a third signal indicating the position of said carrier relative to said platen during relative movement therebetween;

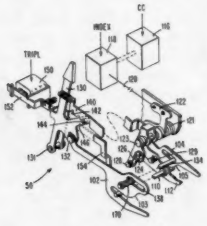
means for producing from said first, second and third signals, a signal including the position of said carrier with respect to said paper edges;

and margin determining means including programmable means for setting a predetermined value distance from said left and right edges of said paper, and means to combine said predetermined value with said left edge position to indicate and define a left margin location, and to combine with said right edge position to define the location of the right margin relative to the paper.

4,272,205
SIGNAL CONTROLLED INDEXING RATE SHIFTER FOR A TYPEWRITER

John J. Bisczat, and Charles D. Bleau, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,953
Int. Cl.³ B41J *19/76*
U.S. Cl. 400—575 **7 Claims**



1. A paper indexing device for a typewriter of the kind having a platen that serves in defining a paper feed path and is rotatable to advance paper past a printing line, said indexing device comprising:

a ratchet wheel connected to rotate with said platen;

a pawl moveable to engage and transmit drive motion to said ratchet wheel;

signal activated drive means for moving said pawl in a reciprocating drive motion,

follower means coupled to said pawl for influencing the amount of motion transmitted from said pawl to said ratchet wheel in accordance with a follower path;

a first cam that is moveable to define a plurality of individual follower paths corresponding to respective paper indexing rates;

a second cam for defining a follower path corresponding to a preselected paper indexing rate;

means responsive to a control signal, for selecting a cam to define the operative follower path for said follower means whereby a signal-controlled change in paper advance rate is provided which does not disturb the rate selection at said first cam.

4,272,206
SAFETY INK PEN

J. Paul Treen, 5025 St. Bernard Ave., New Orleans, La. 70119

Filed Oct. 30, 1978, Ser. No. 955,804
Int. Cl.³ B43K *24/06*
U.S. Cl. 401—105 **7 Claims**

1. A retractable ink pen, comprising:

a. an outer, longitudinally elongated body having an exterior surface;

b. an inner, ink containing cartridge located within said body, said cartridge being provided with a lower ink dispensing tip portion, said cartridge being movable with respect to said outer body between a first, operative writing position in which said tip portion extends out of said body and a second, non-operative, retracted position in which said tip portion is located within said body;

c. a resilient clip associated with and movable with respect to a portion of said exterior surface of said outer body when said ink cartridge is moved between its operative and non-operative positions, said clip extending over a portion of said body and having an entry end for attaching said ink pen to for example a shirt pocket; and

d. movable blocking means fixedly attached to said body and extending radially out from the exterior surface of said body for blocking said entry portion and preventing the attachment of the ink pen to for example a shirt pocket when the tip portion is in its operative position, said blocking means then being located immediately outside of and in front of said entry portion and comprising a radially, exteriorly projecting guard member fixed to said outer body, said guard member being longitudinally aligned with and located right in front of the entry end into said clip when said tip portion is in its operative, writing position but being positioned away from said entry end when the pen is in its non-operative, retracted position, the relative movement of said cartridge with respect to said body simultaneously occurring with the relative movement of said blocking member and said clip.

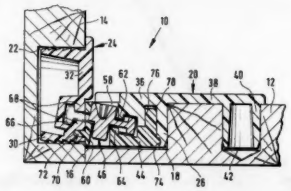
4,272,207
JOINING DEVICE

Karl Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 974,042
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836678
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—231 **14 Claims**

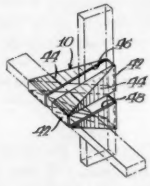
1. A joining device for joining first and second board-like furniture parts meeting at an angle, preferably at right angles, with respect to each other, comprising: first and second fittings adapted to be mounted fixedly into first and second mortises respectively in said first and second furniture parts, said first

fitting comprising a turn wedge with a spiral-shaped locking wedge which is mounted in said first fitting for turning out of a starting position in which it is turned back into said first fitting, into a locking position in which it emerges from said first furniture part, said second fitting having in its surface facing said first fitting an elongated undercut recess into which the locking wedge can engage, said first and second fittings being in the form of substantially cylindrical, plastic drive-in cups adapted to be inserted into said first and second mortises respectively, said first and second mortises having orifices on one side face of said first and second furniture parts respectively, said first mortise being broken-through to an edge of said first furniture part for the passage of said turn wedge, and said first fitting having a flattened portion at its side associated with said break-through such that the flattened portion open for the passage of the turn wedge is approximately flush with



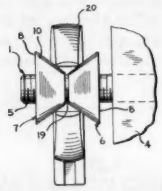
said edge when in its proper position of assembly, said locking wedge being formed by a marginal molding projecting in opposite directions over more than 180° from the marginal portion of a disk-like base part provided with pivots for mounting in said first fitting, said marginal molding having surfaces on opposite sides of said base part, which surfaces extend spiral-like and face said pivots and engage behind inner surfaces of two locking abutments projecting from opposite lateral surfaces of said elongated recess in said second fitting, said first fitting being composed of a cup having a bottom and integral therewith a circumferential wall which is cylindrical with the exception of said flattened portion and which is open on the side opposite to said bottom, and an obturator inserted in the open side of said cup, and bearings for the pivots of the turn wedge being provided in said bottom and in said obturator.

4,272,208
CONNECTOR DEVICE
Dixon J. Jones, Box 80023, Fairbanks, Ak. 99708
Filed May 5, 1980, Ser. No. 146,252
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—396 **6 Claims**



4. A device for connecting a pair of members of rectangular cross-section having their longitudinal axes perpendicular to each other, each member having an outer surface and a pair of parallel side surfaces, said device comprising a unitary thin sheet formed into the general shape of the surface of a hexahedron having two parallel rectangular faces and four trapezoidal faces, the rectangular faces being oriented with their longitudinal axes perpendicular to each other; a first slot through one of said rectangular faces and one pair of trapezoidal faces, said first slot being perpendicular to the longitudinal axis of said one face and extending to and having the width of the other of said rectangular faces; a second slot through the other of said rectangular faces and through the other pair of trapezoidal faces, said second slot being perpendicular to the longitudinal axis of said other face and extending to and having the width of said one rectangular face; each of said connected members being received in a respective slot with its outer surface engaged by and secured to the rectangular face at the bottom of the slot, and its parallel side surfaces contacted and engaged by edges of said sheet.

4,272,209
ANTI-VANDALISM NUT ASSEMBLY
Daniel Joseph, Jr. II, Ojo Caliente, N. Mex., assignor to Roland C. Zinn, Tesuque, N. Mex.
Filed Feb. 22, 1978, Ser. No. 880,216
Int. Cl.³ F16B *33/00*
U.S. Cl. 403—408 **1 Claim**



1. A bolt and nut assembly to secure a structure member such as a sign or the like to a support member to prevent removal by vandals, comprising a bolt having head means engaging one of the members and a threaded shaft extending through the other member and projecting outwardly therefrom, an inner nut threaded onto the shaft and disposed to be seated in engagement with the structure to secure the latter in place, the inner nut having an outer facing surface of a generally pyramid-like configuration normally non-gripping by a conventional tool to rotate the inner nut into or out of seated position with respect to the members, a second nut threaded onto the shaft outwardly of the inner nut and acting as in implements in combination with a conventional tool actuated between the inner and outer nut in engagement with both nuts when slightly spaced apart to rotate the inner nut into a seated position or to remove the inner nut from the seated position, and the outer nut being removable from the shaft of the bolt when not in use.

4,272,210
INTERCHANGE SYSTEM
Sanae Shoji, 5-25 Sumiyoshicho, Numazu-shi, Shizuoka-ken, and Shigeo Shoji, 46-5 Niski-Tsutsujigaoka 1 chome, Chofuski, Tokyo, both of Japan, assignors to Sanae Shoji; Kunio Shoji; Michio Shoji, all of Numazu and Shigeo Shaji, Tokyo, all of, Japan
Filed Sep. 6, 1979, Ser. No. 73,142
Claims priority, application Japan, Sep. 12, 1978, 53-111271
Int. Cl.³ E01C *1/04*
U.S. Cl. 404—1 **4 Claims**

1. An interchange system serving elevated railways, roadways and pedestrian paths formed along the opposite sides of the roadways, which interchange system comprises:

a rotary roadway constructed at a level above the ground surface providing a cylindrical hollow space formed at the center thereof, an annular bus stop compound formed along the periphery of the cylindrical hollow space, and an annular vehicular lane formed along the circumference of the annular bus stop compound and adapted to admit one-way traffic of vehicles,

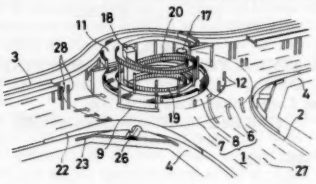
an annular platform including a railway station and located directly above the annular bus stop compound at a level

convenient for users of railcars to enter or leave railcars stopped along the platform,

a circular plaza located in said hollow space a small depth below the ground surface,

interconnecting passages located in said hollow space providing communication among the circular plaza, the annular bus stop compound, and the annular platform for railcars,

tunnel-like radial pedestrian passages located under the rotary roadway a substantially level connection between the circular plaza and pedestrian decks formed along the opposite sides of the roadways, and



gradual slopes formed across the borderlines of the rotary roadway laid on the ground surface and converging into the rotary roadway so as to smooth the entry into and departure from the rotary roadway of traffic streams, whereby communication between the pedestrian paths running along the opposite sides of the roadways is attained through the medium of the tunnel-like pedestrian passages and the circular plaza, and whereby the hollow space is utilized as a means for providing access amongst the vertically separated circular plaza, rotary roadway and annular platform.

4,272,211

WEAR RESISTANT SLAB

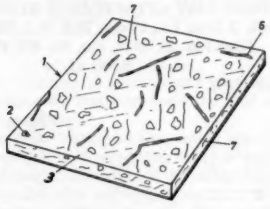
Erik A. Sabel, Industrigatan, S-531 01 Lidköping, Sweden

Filed Feb. 13, 1979, Ser. No. 11,860

Claims priority, application Sweden, Feb. 27, 1978, 7802179

Int. Cl.³ E01C *11/24*

U.S. Cl. 404—21 **10 Claims**



1. A method of making a wear-resistant slab which comprises, rapidly quenching austenitic molten cast iron by contacting said molten cast iron with water to produce martensite granules of extremely high hardness, and embedding said granules in a slab-forming body of material selected from the group consisting of synthetic resin and rubber having a lower specific weight than said granules, with said granules concentrated at the upper face of said slab, lower portions of said slab being substantially free of said granules.

4,272,212

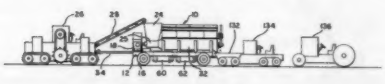
METHOD AND APPARATUS FOR REJUVENATING AND RECYCLING ASPHALT

Andrew J. Bauer, Jr., 7937 Arnoldtown Rd., Louisville, Ky. 40214, and John N. Doering, Louisville, Ky., assignors to Andrew J. Bauer, Jr.; Andrew J. Bauer, III, both of Louisville, Ky.; Harold G. Shaw, Sr., Jeffersonville, Ind. and Fred W. Balke, Crestwood, Ky., part interest to each

Filed Jun. 15, 1979, Ser. No. 48,841

Int. Cl.³ E01C *7/24, 19/10*

U.S. Cl. 404—72 **21 Claims**



1. A process for recycling asphalt, the steps of which comprise

(A) providing a quantity of crushed asphalt previously removed from a paved surface,

(B) mixing said quantity of crushed asphalt with a quantity of water to provide an intermediate mixture, and, thereafter

(C) mixing a quantity of calcium oxide with said intermediate mixture to form a resultant mixture,

(D) mixing a quantity of asphalt oil with said resultant mixture to form a bondable, asphalt based compound, and

(E) applying said compound to a prepared surface after the temperature of said compound has reached a level suitable for such application.

4,272,213

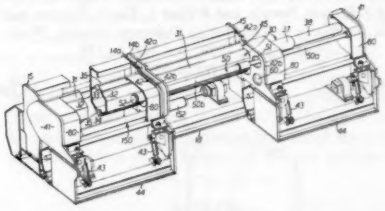
EXTENDIBLE SCREEDS

Roy R. McGovarin, Rainham, Great Britain, assignor to Blaw Knox Limited, Rochester, England

Filed Jul. 10, 1979, Ser. No. 56,208

Int. Cl.³ E01C *19/22*

U.S. Cl. 404—118 **7 Claims**



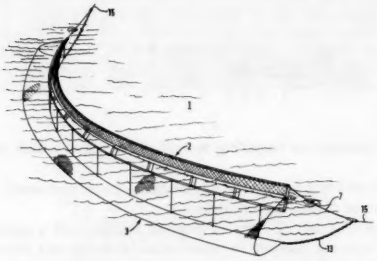
1. A road paving machine having, extending across the rear of the machine, a screed of which the effective overall width is variable and comprising a first part and a second part extending, and reciprocable, along the first to vary the overall width of the screed, the second part being carried from the first by a telescopic support extending in the direction of the width of the screed and of which the outer section is fixed relatively to one of the parts and co-operates with a member that is fixed relatively to the other of the parts, the outer section having an outer surface that is non-circular in cross-section and the member co-operating with the outer surface in such a way that rotation of the member around the section is prevented but sliding of the member along the section is permitted, and means acting between the parts by which one may be slid along the other.

4,272,214

FLOATING FENCE FOR THE COLLECTION OF LIQUID IMPURITIES AS FOR EXAMPLE OIL ON A WATER SURFACE

Harry Nyfeldt, Box 20, S 430 82 Donsö, and Klas Y. T. Bernhardsson, Hus 81, S 430 92 Fotö, both of Sweden

Filed Nov. 5, 1979, Ser. No. 90,897
Claims priority, application Sweden, Nov. 6, 1978, 7811433
Int. Cl.[3] E02B *15/04*
U.S. Cl. 405—72 8 Claims



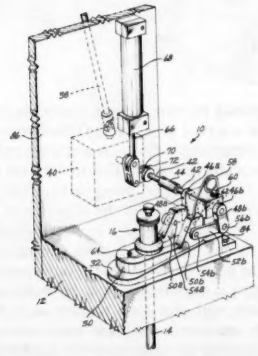
1. Floating fence for the collection of impurities such as oil floating on the surface of a liquid, characterized by comprising a wall (2) intersecting the surface (1) of the liquid and being impermeable in the portion thereof above the surface of the liquid, float bodies (6) carrying said wall, a net (3) having one longitudinal edge attached to a portion of said wall positioned close to the surface of the liquid and another lower longitudinal edge portion provided with a ballast (13) in such a manner that an inlet opening is formed between the lower edge portion of said wall and the lower longitudinal edge portion of said net which results in a bulge being formed by the net behind the wall due to the existing pressure of the liquid when the fence is in use, a towing or anchoring cable (7;13) extending through the upper edge portion of the wall and the lower edge portion of the net, and interspaced suspension cables (14) connecting the lower edge portion of the wall and the lower edge portion of the net.

4,272,215

REMOTE CONTROL COUNTERSINK ADJUSTMENT

Edward J. Davert, Seattle, and Wilbur L. Gants, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 2, 1979, Ser. No. 26,122
Int. Cl.[3] B23B *47/00*
U.S. Cl. 408—14 3 Claims



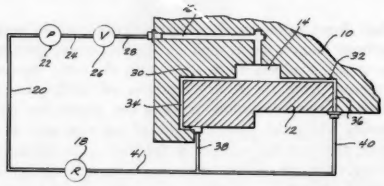
1. A device for remote control of countersink depth on an automatic riveting maching comprising: a reversible motor, a shaft driven by the motor, a pair of wedges mounted one on top of the other with the wedges having aligned slots, linkage extending from the shaft to reciprocally move the upper wedge in response to motor rotation to vary the heighth of the upper surface of the upper wedge, a second linkage extending from the shaft to reciprocally drive a rod a distance relative to the movement of change in the wedge as the shaft rotates, means for converting rod movement into an electrical signal for a readout to directly show heighth change in the wedge, and the wedges located to accept a spindle of an automatic riveting machine through the slots and the top surface of the upper wedge to act as a stop for downward movement of the spindle to control countersink depth.

4,272,216

MACHINE TOOL LUBRICATION SYSTEM

John G. Osburn, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 20, 1978, Ser. No. 971,351
Int. Cl.[3] B23Q *4/12*
U.S. Cl. 409—132 5 Claims



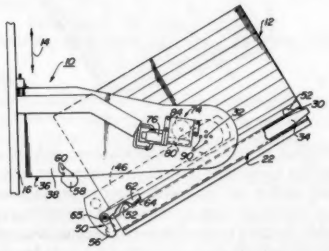
1. A method of lubricating a bearing on a machine tool slide, said machine tool including means for commanding motion of said slide toward a predetermined position, and means for applying a lubricant under pressure to said bearing, said method comprising the steps of applying a lubricant under pressure to said bearing when motion of said slide is commanded, reducing the pressure of said lubricant applied to said bearing when the velocity of said slide is accelerated to a predetermined value, increasing the pressure of said lubricant applied to said bearing when the velocity of said slide is decelerated to a predetermined value, and reducing the pressure of said lubricant to said bearing when said slide arrives at its commanded position so that the acceleration and deceleration of said slide occurs in a smooth and uniform manner.

4,272,217

FORK LIFT ATTACHMENT SYSTEM

Robert Sefcik, 3 Briar La., Cherry Hill, N.J. 08002

Filed Feb. 22, 1978, Ser. No. 880,192
Int. Cl.[3] B65G *65/34*
U.S. Cl. 414—420 12 Claims



1. A fork lift attachment system having a transverse axis adapted to be mounted to a fork lift truck used for vertically

displacing a container in a reversible manner with respect to a horizontal plane comprising:

(a) means for releaseably mounting said container to said fork lift attachment system including (i) a pair of longitudinally extending arm members, said arm members being transversely displaced each from the other and (ii) a pair of container insert members fixedly secured to opposing transverse sides of said container, said insert members adapted for insertion of said arm members, and including a pair of channel members each having a longitudinally extending through passage for insert of said arm members,

(b) means for reversibly rotating said container about a first axis line, said first axis line extending (1) substantially normal to said vertical displacement and (2) substantially parallel to said transverse axis subsequent to said container being mounted to said fork lift attachment system

(c) a vertically displaceable frame member mounted to said fork lift truck, said arm members being rotatably displaceable with respect to said frame member about said first axis line,

(d) means for releaseably capturing said container including (i) at least one lug member fixedly secured to at least one channel member, and (ii) cam means secured to said frame member and at least one arm member for acting in cooperative relation with said lug member for maintaining said container in fixed constrainment to said arm member when said container is rotationally displaced, said cam means including, (A) a cam member fixedly secured to said frame member, and (B) a cam follower member rotatably secured to said arm member for intercepting a path displacement of said lug member when said container is rotatively displaced.

4,272,218

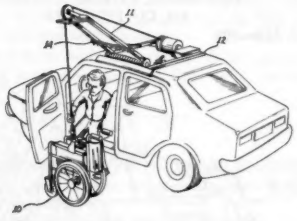
APPARATUS FOR TRANSPORTING A WHEELCHAIR UPON AN AUTOMOBILE

Robert A. Carter, 611E N. 16th St., Phoenix, Ariz. 85006

Continuation-in-part of Ser. No. 850,188, Nov. 10, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,892

Int. Cl.³ B60R *9/00*

U.S. Cl. 414—462 **12 Claims**



1. Apparatus for raising an article from a ground position to an engaged position for transport upon the roof of a motor vehicle which comprises:

(a) a supporting base adapted for mounting upon the roof of the motor vehicle, said supporting base having a first edge portion proximate to one side of the motor vehicle and an opposing second edge portion;

(b) a frame member having a first end and a second end, the first end being rotatably mounted to the supporting base adjacent the first edge portion;

(c) cable guide means affixed to the second end of said frame member;

(d) a support cable extending through said guide means and having a free end adapted for attachment to the article, and an opposing end;

(e) stop means secured to said support cable for preventing movement of the free end of said cable through the guide means;

(f) cable reel means attached to said apparatus for receiving the opposing end of said support cable, the actuation of said cable reel means causing an attached article to change elevation, the movement of cable through said guide means being limited by the stop means;

(g) drive means for rotating the frame member between a transport position overlying the vehicle roof and an extended position with the second end thereof extending outwardly of the motor vehicle; and

(h) engaging means mounted between the first and second ends of said frame member for engaging the article as said frame member is being rotated to the transport position.

4,272,219

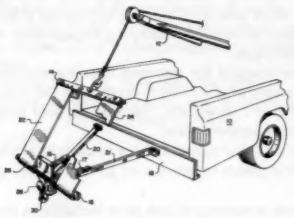
VEHICLE TOWING APPARATUS

William M. Hill, Jr., 1414 N. Zang, Dallas, Tex. 75203

Continuation of Ser. No. 836,360, Sep. 26, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,439

Int. Cl.³ B60P *3/12*

U.S. Cl. 414—563 **8 Claims**



1. Apparatus for directly lifting and towing one end of a vehicle between its chassis and bumper by a towing truck without the connection of conventional chains, said apparatus comprising:

a tow sling attached to the towing truck;

a transverse tow bar attached to said tow sling for supportive engagement by the towing truck;

a mounting rib upstanding from the tow bar said rib being in demountable coupling therewith for permitting utilization of said tow bar without said rib, adapted for engaging the vehicle to be towed adjacent to a bumper thereon and between the bumper and vehicle chassis, thereby securing said bumper to the tow truck for towing without the connection of the conventional chains; and

said mounting rib comprising a stationary rigid beam structurally coupled to said tow bar and including a notched section formed centrally thereof for receiving structural frame members attached to said vehicle between its chassis and bumper for applying a horizontal force to the forward surface of the bumper to tow the vehicle.

4,272,220

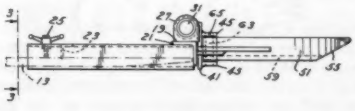
DRUM LIFTER FOR FORK LIFT TRUCK

Jose M. Garcia, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed May 4, 1979, Ser. No. 35,883

Int. Cl.³ B66F *9/18*

U.S. Cl. 414—607 **27 Claims**



1. A drum lifter comprising a base including a pair of parallel

spaced fork tubes adapted for receiving at one end and positioning over a pair of vertically adjustable forks of a lift truck, and a support plate spanning and secured to the other ends of said tubes;

spaced apertured support blocks mounted upon said support plate;

a pipe extending through a secured to said blocks;

upright stops on said support plate spaced from said support blocks respectively;

a pair of spaced sleeves journalled upon said pipe between a support block and an adjacent stop adapted for limited rotation upon a horizontal axis;

an upright jaw support plate tangentially secured to each sleeve for rotation therewith;

a pair of laterally spaced opposed arcuate drum-engaging jaws projecting forwardly of said sleeves respectively and pivotally mounted at one end upon said jaw support plates adapted for rotation upon vertical axes;

a stop plate mounted on and extending laterally outward of each jaw adjacent its pivot end and including a rearwardly extending stop abutment engageable with said support plate when said jaws are in a horizontal position holding said jaws in operable clamping engagement with a drum therebetween;

said jaws adapted for outward opening movement for encompassing or releasing a drum after the jaw plates have been rotated upwardly, disengaging said stop abutments from said support plate;

return of said jaw support plates to upright position, causing said stop plates to move said jaws inwardly gripping the drum;

the pivotal mounting of said jaws including a pair of spaced trunnions upon each jaw support plate;

a jaw sleeve mounted on one end of each jaw extending transversely thereof and nested between said pair of trunnions; and a pivot pin extending through said jaw sleeve, and through said trunnions and secured thereto; and

a stop pin extending longitudinally of each jaw sleeve and secured thereto, adapted for operative engagement with the adjacent jaw support plate limiting inward movement of said jaws respectively.

4,272,221

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLES

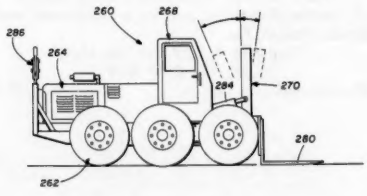
Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 835,726, Sep. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 799,328, May 23, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 10,084

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B62D *11/02*

U.S. Cl. 414—634 **7 Claims**



1. A rough terrain fork lift truck comprising:

(a) a pair of undercarriage assemblies, each including:

an elongate hollow load-bearing frame;

at least three axle members each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to a wheel receiving member of an axle member outside said frame;

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending out of the frame and being rotatably supported in at least one side of the frame;

the middle wheel member extending below a plane lying tangent to the bottoms of the end most wheel members to facilitate skid steering of the rough terrain fork lift truck;

transmission means including sprockets and chains positoned within the frame and drivingly interconnecting at least two of the axle members; and

drive means including a motor mounted on the frame and operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members;

(b) an engine supported on the undercarriage assemblies at the rear end thereof;

(c) a fork lift mechanism mounted on the undercarriage assemblies at the front end thereof, the fork lift mechanism including:

a normally vertically disposed mast;

a travelling mechanism supported for vertical movement relative to the mast;

means for selectively raising and lowering the travelling mechanism on the mast;

at least one fork member mounted on the travelling mechanism for vertical movement therewith relative to the mast; and

means for selectively pivoting the mast about a horizontal axis extending parallel to the axle members comprising the undercarriage assemblies.

4,272,222

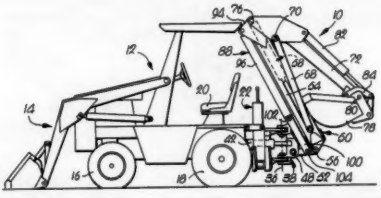
BOOM APPARATUS

Charles J. Davis, Afton, Okla., assignor to The General, Inc., Wichita, Kans.

Filed Jan. 11, 1979, Ser. No. 2,597

Int. Cl.³ E02F *3/74*

U.S. Cl. 414—694 **8 Claims**



1. Boom apparatus including:

a support;

a boom mounted on said support for vertical swinging movement relative to the latter about a first horizontal axis;

power means between said support and said boom for effecting said movement of the latter,

said power means being swingable about a second horizontal axis during said movement of the boom,

said boom having a joint therein for articulation about a third horizontal axis spaced outwardly of said first and second axes; and

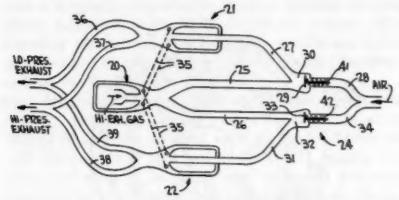
means for controlling said articulation of the boom during said movement thereof,

said control means comprising a rigid link pivotally connected between said power means and said boom.

4,272,223
FLUID DYNAMIC ENERGY EXCHANGER

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed Mar. 30, 1979, Ser. No. 25,714
Int. Cl.³ F04F *11/02*
U.S. Cl. 417—54 **11 Claims**



1. Apparatus for transferring energy from a first fluid at relatively high pressure to a second fluid at relatively low pressure comprising:

master commutator means responsive solely to application of said first fluid thereto under pressure for forming a series of discrete spaced slugs of said first fluid;

a fluid passage having first and second ends;

means for establishing compression waves in said fluid passage by delivering said discrete slugs of said first fluid to said first end thereof;

means for admitting said second fluid into said fluid passage between slugs of said first fluid such that said second fluid is pressurized by said compression waves; and

slave commutator means for receiving fluid from said fluid passage at the second end thereof and separating said first fluid from said second fluid.

7. A method for transferring energy from a flowing first fluid at relatively high pressure to a second fluid at relatively low pressure comprising the steps of:

forming a series of discrete spaced slugs of said first fluid at a frequency determined by the flow rate of said first fluid;

establishing compression waves in a fluid passage by delivering said discrete slugs of said first fluid to a first end thereof;

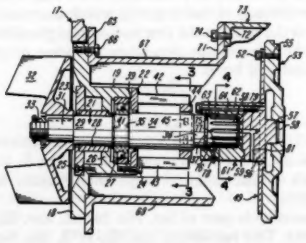
admitting said second fluid into said fluid passage between slugs of said first fluid such that said second fluid is pressurized by said compression waves;

receiving fluid from said fluid passage at the second end thereof and separating said first fluid from said second fluid.

4,272,224
SPLINED SHAFT DRIVING ARRANGEMENT

Walter A. Kabele, Piqua, Ohio, assignor to Roper Industries, Inc. (Ohio), Piqua, Ohio

Filed Aug. 25, 1978, Ser. No. 936,719
Int. Cl.³ F04B *17/00, 39/02*
U.S. Cl. 417—360 **23 Claims**

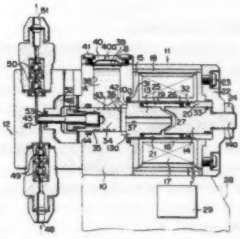


1. A pump unit including a housing embodying impeller means for drawing liquid thereto and delivering the same therefrom, with or without solids, means constituting an adapter for connection with a drive element of any one of a variety of engines, said impeller having a drive shaft in connection therewith and extending therefrom through a wall section of said pump housing, said adapter and said impeller drive shaft including portions formed to provide a male-female interfit producing a connection therebetween which inhibits their relative rotary motion, said connection being provided by a slip fit of one to the other, said interfitting portions defining a lubricant chamber constructed and arranged to accommodate and maintain a storage of lubricant for maintaining the operative condition of these parts and said adapter embodying a relief passage for escape of excess lubricant when said pump is inoperative, said passage being located to preclude escape of lubricant from said chamber and said connection when said pump is operating.

4,272,225
ELECTROMAGNETICALLY-OPERATED FIXED DISPLACEMENT PUMP

Yoshiaki Fujinaka, Tokyo; Haruo Ohashi, Kawagoe; Masahito Miyazaki, Fujimi; Kenzi Mizuno, Tokorozawa, and Fukuzi Kuwabara, Fujimi, all of Japan, assignors to Iwaki Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,550
Claims priority, application Japan, Apr. 8, 1978, 53-41578
Int. Cl.³ F04B *17/04*
U.S. Cl. 417—417 **11 Claims**



1. An electromagnetically operated fixed displacement pump comprising:

a body having a bore therein;

a pump head assembly attached to said body and including an inlet, an outlet, valve means and a pump house to contain a pumped fluid;

a solenoid assembly including a solenoid coil surrounding a cylindrical bore, a movable armature slidably disposed in said cylindrical bore surrounded by said coil, return spring for urging the movable armature in one axial direction, stop means for normally holding the movable armature against the biasing force of said return spring in a normal position, a fixed armature axially facing said movable armature and fixedly positioned in said cylindrical bore, said movable armature defining a maximum electromagnetic gap with the fixed armature when the movable armature is in a normal position, and an annular spring chamber for containing the return spring, said annular spring chamber being defined in the said cylindrical bore surrounded by said coil over the outer peripheries of said two armatures;

an intermediate axially and slideably disposed in said bore of said body and being integral with said movable armature for changing the capacity of the pump house in response to the sliding movement of the movable armature, thereby forcing out by regular displacements the fluid to be pumped from said pump house, said intermediate member and said movable armature together forming an integral body;

a storage tank mounted in said body for containing a lubricating fluid;

a cross circulation hole mounted across the intermediate portion of said integral body formed of said movable armature and said intermediate member;

fluid communication means for communicating the fluid in said tank with said cross circulation hole; and

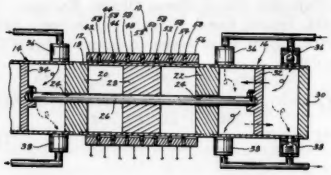
an axial circulation hole axially formed in said movable armature and opening at one end into said electromagnetic gap and at the other end into said cross circulation hole.

4,272,226

FLUID PUMP AND METHOD FOR OPERATING SAME

Harry E. Osborne, 1246 Fourth Ave. North, Fort Dodge, Iowa 50501

Filed Jan. 8, 1979, Ser. No. 1,676
Int. Cl.[3] F04B *17/04*
U.S. Cl. 417—418 7 Claims



1. A fluid pump comprising:

at least one pumping cylinder having a pumping piston mounted for reciprocating movement therein, at least one inlet valve being provided in said pumping cylinder for permitting entry of fluid into said pumping cylinder in response to movement of said pumping piston in a first direction and at least one outlet valve being provided in said pumping cylinder for permitting exit of fluid in response to movement of said pumping piston in the opposite direction;

a magnetic piston,

a piston rod interconnecting said magnetic piston and said pumping piston for causing them to reciprocate in unison in said first and second directions;

a plurality of separate coils positioned in side by side registered alignment and in surrounding relationship to said magnetic piston;

electrical power means for actuating said coils to cause axial movement of said magnetic piston;

control means connected electrically between said power means and said separate coils for causing sequential actuation of said separate coils to move said magnetic piston back and forth in an axial direction, thereby causing reciprocating movement of said pumping cylinder;

said coils in combination forming a coil cylinder having an axial length greater than that of said magnetic piston whereby only a portion of said coils are located immediately radially outwardly from said magnetic piston for any given position of said magnetic piston,

said control means comprising a clock decoder circuit for causing electricity from said electrical power source to be directed to only a portion of said separate coils at one time in a stepping sequence wherein those of said coils located adjacent said magnetic piston are actuated throughout reciprocating movement of said magnetic piston;

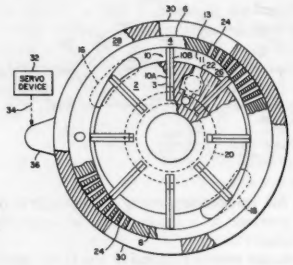
said clock decoder circuit comprises a timing circuit, and a counting and decoding circuit, said control means further comprising a diode matrix circuit connected to said clock decoder circuit, and a plurality of output circuits each of which is electrically connected to one said separate coils.

4,272,227

VARIABLE DISPLACEMENT BALANCED VANE PUMP

Frank Woodruff, New Hartford, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 26, 1979, Ser. No. 23,812
Int. Cl.[3] F04B *49/02;* F04C *2/00, 15/02*
U.S. Cl. 417—440 2 Claims



1. A variable displacement balanced vane pump, comprising:

a cam ring having a pair of diametrically opposed lobes;

a rotor rotatable in the cam ring and having a plurality of radially extending slots spaced equidistantly therearound;

a plurality of vane means disposed in the slots and extending to the inner circumference of the cam ring;

a rotatable control ring in close diametrical fit with the outer circumference of the cam ring;

a pair of port plates sandwiching the rotor and cooperating to provide a pair of diametrically opposed inlet ports and an annular discharge port;

valves carried by passages in the rotor in the space between adjacent vane means and permitting fluid flow radially inward from the inlet ports to the discharge port;

means for rotating the control ring;

means associated with the cam ring and the control ring for providing an alternate fluid flow passage and for thereby regulating fluid flow through the valve upon rotation of the control ring;

said last-mentioned means comprising a first plurality of radially extending holes carried by one portion of the cam ring, a second corresponding plurality of radially extending holes carried by a diametrically opposite portion of the cam ring, the first and second pluralities of holes being in communication with corresponding spaces between the vane means, the control ring carrying a pair of diametrically opposed by-pass ports, and the alternate fluid flow passage being provided upon rotation of the control ring which brings the by-pass ports carried thereby in communication with the first and second pluralities of holes carried by the cam ring; and

the circumference of the contact line between the vane means and the inner circumference of the cam ring being greater than the diameter of the holes in the first and second pluralities of holes to insure a seal with the inner circumference of the cam ring which prevents fluid leakage via the holes in the first and second pluralities of holes past the vane means tips when the vane means tips are adjacent said holes.

4,272,228

HIGH VOLUME DISPENSING PUMP

Louis F. Kutik, Fort Lauderdale, and Howard E. Cecil, Miramar, both of Fla., assignors to Security Plastics, Inc., Miami Lakes, Fla.

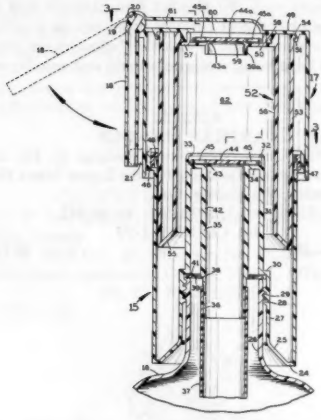
Continuation-in-part of Ser. No. 28,962, Apr. 11, 1979, abandoned. This application Jul. 23, 1979, Ser. No. 59,982
Int. Cl.[3] F04B *21/04;* B67D *5/42;* F04B *19/00*
U.S. Cl. 417—460 10 Claims

1. In a pump for expelling fluid product from a container

having a reduced neck leading to an opening at its upper end, said pump comprising:

means defining a variable volume pressurizing chamber with an inlet for receiving the fluid product from the container and an outlet for discharging the fluid product from the pressurizing chamber, said means including a fixed body having means for attaching it to said neck of the container and a manually displaceable plunger slidable downward along said fixed body to decrease the volume of said chamber and increase the fluid pressure therein and slidable upward to increase the volume of said chamber and reduce the fluid pressure therein;

means defining an upwardly-facing annular recess located radially outward from said means for attaching, so as to extend around the reduced neck on the container when said fixed body is attached thereto, said annular recess communicating at its upper end with said pressurizing chamber for the flow of fluid product between them;



said plunger having a depending annular portion thereof slidably received in said annular recess to pump fluid product out of said recess when the plunger is moved down along said fixed body;

an inlet valve at said inlet comprising a valve seat and a movable valve member which is sealingly engageable with said valve seat, said inlet valve being operable to open in response to a pressure decrease in said pressurizing chamber when the plunger moves up and to close in response to a pressure increase in said chamber when the plunger moves down;

and a discharge valve at said outlet comprising a valve seat and a movable valve member which is sealingly engageable therewith, said discharge valve being operable to open in response to a pressure increase in said pressurizing chamber when the plunger moves down and to close in response to a pressure decrease in said chamber when the plunger moves up;

4,272,229

PIVOTAL PISTON MACHINE

Wilhelm Pape, Wunstorf, Fed. Rep. of Germany, assignor to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,203

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803853

Int. Cl.[3] F04C *9/00*; F01C *9/00*

U.S. Cl. 417—481 **2 Claims**

1. A pivotal piston compressor comprising:

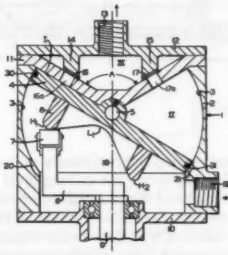
(a) a housing having a spherical piston chamber characterized by a continuous seamless surface, an outlet port, and an inlet port formed therein;

(b) a disc-shaped pivotal piston oscillatingly disposed in said piston chamber on an oscillatory axis coinciding with the greatest diameter of said spherical piston chamber;

(c) an annular sealing ring disposed in an annular groove surrounding the periphery of said piston;

(d) a valve plate in the form of a wedge and of V-shaped cross section and disposed in said piston chamber with the apex of the wedge coinciding with said oscillatory axis and serving as an oscillatory pivotal bearing for the pivotal piston,

(e) said valve plate cooperating with said housing to form on one side and within the inner angle thereof a delivery chamber communicating with said outlet port, and cooperating with said housing and pivotal piston to form on the side opposite said one side a pair of compression chambers



communicable with said delivery chamber via respective discharge valves disposed in said valve plate;

(f) each of said compression chambers communicating with said inlet port via respective scavenging ports formed in the inner wall of said housing, and each of said compression chambers being alternately pressurized via said scavenging ports and discharged via said discharge valves by oscillating motion of said piston;

(g) a cylindrical cam extending coaxially from the side of said pivotal piston opposite the compression chambers, said cam having an undulated cam surface characterized by two diametrically opposite high points disposed at 90° relative to two diametrically opposite low points,

(h) a crank arm having a cam roller for making rolling contact with said cam surface; and

(i) a driveshaft for rotating said crank arm for imparting oscillating motion to said pivotal piston.

4,272,230

SLIP FORM FOR BUILDING COMPONENTS

Giorgio Abate, Modena, Italy, assignor to Solai Vignola di Faviani Orlando ec Societa, Ancona, Italy

Division of Ser. No. 720,749, Sep. 7, 1976, Pat. No. 4,128,975.

This application May 23, 1977, Ser. No. 799,714

Claims priority, application Italy, Sep. 5, 1975, 40085 A/75; Dec. 18, 1975, 40133 A/75; Dec. 18, 1975, 40232 A/75; Apr. 8, 1976, 40057 A/76

Int. Cl.[3] B28B *7/22*

U.S. Cl. 425—64 **6 Claims**

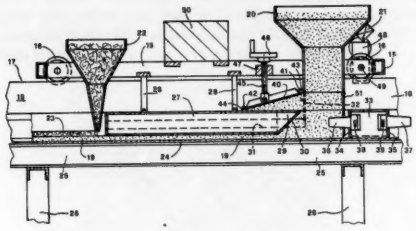
1. A machine for manufacturing prefabricated building components formed of an insulating concrete mix, comprising

means in which to cast said insulating concrete mix, said means comprising an elongation mold having a bottom wall and side walls;

means to cast said insulating concrete mix into said elongation mold along the length thereof;

shaping means to shape the upper surface of the insulating concrete mix when it has been cast within said elongated mold, and to provide at least one deep depression in the concrete mix within said elongated mold, which depres-

sion has a generally rectangular cross section, said shaping means comprising at least one elongated shaping hull, said shaping hull extending below the upper edges of said side walls of said mold, said shaping hull having an upper level, a bottom molding surface, side molding surfaces extending between said upper level and said bottom molding surface, an upstream end and a downstream end, wherein said hull is adapted to form the depression in the cast insulating concrete mix with the depression extending longitudinally of said elongation mold, the upstream end of said hull being provided with means to force the mix downwardly and including a face sloping downwardly



and rearwardly from approximately said upper level, said upper level being above the casting level in said mold;

wherein said elongated shaping hull comprises groove forming means to form undercut grooves in the concrete mix along the sides of the depression adjacent the bottom thereof, said groove forming means comprising a longitudinally extending bulge at the bottom of said side molding surfaces of said elongated shaping hull; and

means to move said elongated shaping hull relative to said elongated mold along a direction parallel to the sides of the mold whereby said hull penetrates into the insulating concrete mix to compress the mix downwardly to form the depression of generally rectangular cross section.

4,272,231

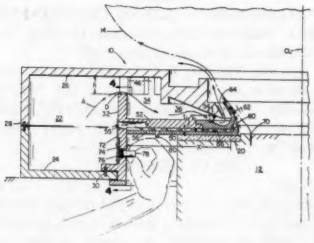
AIR COOLING RING FOR PLASTIC FILM WITH INDEPENDENT LUBRICATING AIR FOR FILM GUIDE SURFACE

Charles M. Schott, Jr., Atkinson, N.H., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Continuation-in-part of Ser. No. 859,824, Dec. 12, 1977, Pat. No. 4,145,177. This application Mar. 15, 1979, Ser. No. 20,793

Int. Cl.³ B29F *3/08*; B29D *7/22*

U.S. Cl. 425—72 R **4 Claims**



1. In an air ring for cooling the exterior of a hot extruding tube of plastic film, including a ring-form plenum supplied with cooling air, means defining a generally inwardly progressing cooling air flow path receiving air from the plenum and leading to an annular cooling orifice that discharges cooling air into contact with the plastic film, means defining a film guide surface upstream along the film path preceding said orifice, and means for supplying air to move with the film between the film and the guide surface,

that improvement comprising a circumferentially arranged lubricating air bleed port means communicating with air from said plenum independent of said inwardly progressing cooling air flow path, said bleed port means communicating with a bleeded air passage extending inwardly from said bleed port means to an annular lubricating air outlet positioned in advance of said guide surface, and valving means independent of said cooling air flow path for adjusting the flow of bleeded lubricating air, said bleed port means comprising a set of circumferentially spaced-apart discrete holes, said bleed passage being of sufficient length in the direction of flow to enable the discrete flow from said bleed holes, to produce a merged, substantially uniform lubricating flow at said lubricating outlet, said bleed holes being arranged in an annular wall, said valve means comprising a circular array of bleed port closures connected for movement together to simultaneously, dependently vary the bleeded flow through said set of holes, said bleed port closures being moved together by moving a tension band to which said closures are attached, and said band being wrapped around said annular wall.

4,272,232

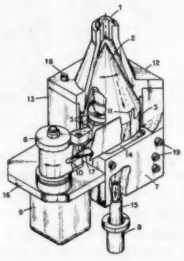
PARTICLE BLENDER

Melvin G. Willey, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,592

Int. Cl.³ B29B *1/04*

U.S. Cl. 425—200 **10 Claims**



1. A particle blending device comprising:

a vertically disposed cone mounted for rotation about its central axis;

a flexible band connected adjacent one of its ends to said cone and extending circumferentially thereof to form therewith a trough for receiving particles, the other end of said band being pulled so that said cone is rotated and said band moves away from its surface at a predetermined spatial point, whereby particles deposited in said trough are permitted to fall at said point.

4,272,233

MOLD FOR PRODUCING EXTRA THIN WALLED PLASTIC CONTAINERS

Donald D. Cochran, Bartlett, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Jun. 25, 1979, Ser. No. 51,436

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **6 Claims**

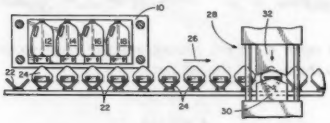
1. A mold assembly for blow molding plastic containers comprising:

a pair of mold halves the respective faces of which when placed in abutting relation form a first cavity, the walls of

said cavity defining the configuration of a container to be blow molded therein,

said mold halves defining when in said abutting relation an area adjacent said cavity into which plastic is received during container molding to form a flash cavity connected to one surface of said first cavity by an interconnecting constricted pinch-off cavity,

one of said mold halves having at least one protrusion in said adjacent area thereof extending outwardly from said face



thereof, the other of said mold halves having at least one complementary aligned recess adapted to receive said protrusion, each protrusion and its aligned recess cooperating to define a cavity for a projection in said flash during a container molding,

means for cooling said mold halves, and

each protrusion and its aligned recess being at a location in said flash cavity which is spaced from said pinch-off cavity.

4,272,234

PELLETIZING APPARATUS

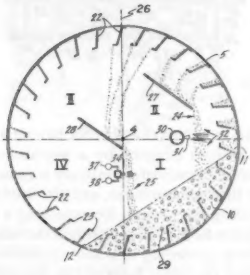
Samuel Y. H. Tse, Calgary, Canada, assignor to Procor Limited, Oakville, Canada

Filed Oct. 25, 1979, Ser. No. 88,235

Claims priority, application Canada, Nov. 6, 1978, 315863

Int. Cl.[3] B22F 3/00

U.S. Cl. 425—222 **10 Claims**



1. Apparatus for producing solid pellets, comprising:

A. rotatable, generally cylindrical drum having a bed of particles therein:

B. a plurality of particle lifting flights extending from the inside surface of said drum generally toward its center, whereby rotation of said drum causes said flights to lift particles from said bed to an upper zone in said drum and to then drop said particles so that said particles fall toward said bed;

C. first means within said drum for deflecting some of the falling particles into a first generally continuous curtain of particles which fall into said bed at a first location;

D. first means for spraying into said first curtain of particles above said bed a liquified substance which adheres to the surface of the falling particles in said first curtain;

E. second means within said drum for deflecting other of the falling particles into a second generally continuous curtain of particles which fall into said bed at a second location that is spaced from said first location, said first and second curtains being separated and distinct from each other; and

F. second means for spraying into said second curtain of particles above said bed a cooling liquid that wets the falling particles in said second curtain and thereby lowers the temperature within said drum to a range within which said liquified substance solidifies on said particles and forms said pellets.

4,272,235

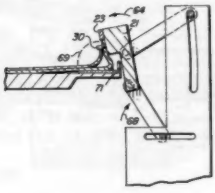
METHOD AND APPARATUS FOR FOLDING AND SEALING A FLOPPY DISC ENVELOPE

David L. Barnett, Phoenix, Ariz., assignor to Three Phoenix Company, Phoenix, Ariz.

Filed Nov. 24, 1978, Ser. No. 963,451

Int. Cl.[3] B29C 17/02

U.S. Cl. 425—397 **10 Claims**



1. Apparatus for making a floppy disc envelope form a sheet of flexible plastic, the sheet having first and second opposed surfaces, first and second sections on opposed sides of a center fold line, first and second floppy disc drive holes which are aligned when the sheet is folded, a plurality of slots for permitting a magnetic head to contact an enclosed floppy disc, and a liner attached to the first surface of the sheet, the second section of the sheet including three flaps foldable about three respective end fold lines around three respective corresponding edges of the first section for connection to the second surface of the first section, said apparatus comprising in combination:

a. aligning means for aligning the envelope on a rigid support after the envelope has been folded about the center fold line and after a floppy disc has been placed between sections of the liner attached to the first and second sections of the flexible plastic sheet, and first section of the flexible plastic sheet being positioned against the rigid support;

b. a rigid stop for limiting movement of material of the envelope adjacent to a first one of the end fold lines;

c. first means for engaging an outer edge of a first one of the flaps and moving the outer edge of the first flap along a variable radius arcuate path over the second surface of the second section of the sheet, the arcuate path having curvature such that the material adjacent to the first end fold line is gathered or bunched up against said rigid stop and then is bent about the first end fold line around one of the corresponding edges of the first section, so that the flexible plastic of the first flap near the first end fold line is forced against the rigid stop, the curvature of said variable radius arcuate path being selected to control the radius of curvature of a fold being formed along the first end fold line;

d. pressing means for pressing the first flap against the second surface of the first section of the sheet and the rigid stop to decrease the radius of the fold being formed along the first fold line, causing the elastic limit of the flexible plastic along the first fold line to be exceeded, thereby producing a permanent fold along the first fold line; and

e. a resilient pad having an edge abutting the rigid stop, the curvature of the arcuate path being such that the material near the first fold line is forced against both the rigid stop and the resilient pad, the thickness and resiliency of said

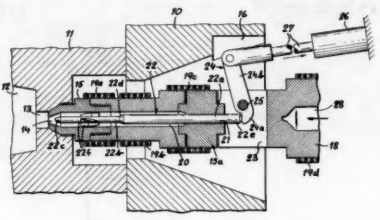
resilient pad being selected to control the radius of curvature of the fold along the first fold line.

4,272,236

INJECTION NOZZLE PROVIDED WITH SHUT-OFF MEANS

Herbert Rees, Willowdale, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems Limited, Bolton, Canada

Filed Dec. 14, 1979, Ser. No. 103,425
Int. Cl.³ B29F 1/03
U.S. Cl. 425—564 **5 Claims**



1. In an apparatus provided with a mold having a cavity, a nozzle for injecting liquefied plastic material into said cavity in a closed position of said mold, said nozzle having a body with a channel terminating in an injection orifice open toward said cavity, and shut-off means for closing said orifice before the mold is opened,

the improvement wherein said shut-off means comprises an elongate valve pin having a rear portion remote from said orifice slidably guided in a bore of said body adjoining said channel for limited longitudinal displacement relative thereto and a front portion with a tip close to said orifice received in said channel with all-around clearance, and actuating means co-operating with said rear portion for forcing said tip into flow-blocking engagement with said orifice, said body being formed with a passage for oncoming plastic material under pressure merging with said channel at the junction thereof with said bore, said valve pin being provided with a shoulder facing said tip for repression by an unblocking force exerted thereon by said plastic material to disengage said tip from said orifice upon deactivation of said actuating means whereby said plastic material is free to flow through said orifice into said cavity, said front portion being provided with a set of peripherally spaced fins skew to the axis of said valve pin, said fins slidably bearing upon an inner wall surface of said channel for imparting a relative rotary motion to the flow of plastic material traversing said orifice.

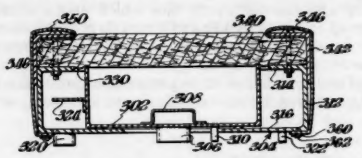
4,272,237

RADIANT HEATING

Thomas M. Smith, 114 Villinger Ave., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, and a continuation-in-part of Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Mar. 9, 1977, Ser. No. 775,838
Int. Cl.³ F23D 13/12
U.S. Cl. 431—328 **10 Claims**

1. In a gas-fired radiant heater having a porous refractory mat at the surface of which a gaseous combustion mixture is burned, mounting means holding the mat edges against a plenum box to define a combustion-mixture supply plenum chamber, the improvement according to which a means forming a gas-supply conduit encircles the plenum box alongside said edges and has means forming a gas discharge opening against which the margin of the mat is positioned and from which a separate stream of non-combusting gas can be passed through the mat all along its periphery and the means forming the gas-supply conduit encircling the plenum is defined between the encircled plenum box and encircling interconnected



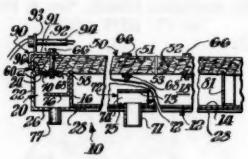
lengths of open members having angular cross-sections and secured to the back of the plenum.

4,272,238

INFRA-RED HEATING AND BURNERS

Thomas M. Smith, 114 Villinger Ave., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 20,079, Mar. 13, 1979, Ser. No. 952,332, Oct. 18, 1978, Ser. No. 863,251, Dec. 22, 1977, Pat. No. 4,224,018, and Ser. No. 775,838, Mar. 9, 1977, said Ser. No. 20,079, and Ser. No. 952,332, is a continuation-in-part of Ser. No. 863,251, , Ser. No. 775,838, , and Ser. No. 906,229, Jul. 1, 1976, abandoned, each is a continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, and Ser. No. 775,838, , and Ser. No. 701,687, , each is a continuation-in-part of Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Nov. 16, 1979, Ser. No. 94,901
Int. Cl.³ F23D 13/12
U.S. Cl. 431—328 **4 Claims**



1. In an infra-red generating burner having a metal combustion mixture plenum covered by a porous refractory panel through which the combustion mixture is passed on the outer face of which that mixture burns, and also having a gas-supply conduit encircling the plenum for supplying a stream of non-combusting gas to be discharged around the face of the burner, the improvement according to which the encircling conduit is defined between the outer faces of the plenum and the inner faces of open angular metal members encircling the plenum, and those metal members are spot welded to the back of the combustion mixture plenum by a series of spot welds.

4,272,239

DIRECT HEATING OF HEAT TREAT FURNACE CHAMBER

Arvind C. Thekdi, Sylvania, and Richard R. Mayers, Delta, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 5, 1979, Ser. No. 90,888
Int. Cl.³ F27D 7/00; F27B 9/04, 5/04
U.S. Cl. 432—19 **16 Claims**

1. A method of directly heat treating articles in the treatment chamber of a heat treatment furnace comprising the steps of:

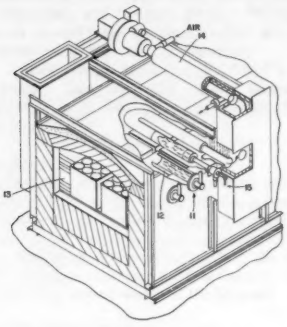
continuously mixing outside the treatment chamber, a stream of fuel and a stream of air wherein the amount of air is less than that stoichiometrically required for complete combustion;

igniting the air and fuel mixture;

burning the fuel in the air outside the treatment chamber

until the oxygen in the air is completely consumed; and subsequently

feeding the reaction products of the burning of the fuel in the air directly into the treatment chamber without further temperature conditioning of such products; and



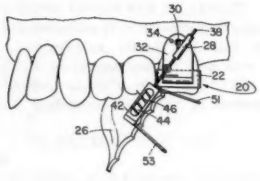
separately feeding a treatment gas directly into the treatment chamber independently of feeding the reaction products into the treatment chamber.

4,272,240

ORTHODONTIC APPLIANCE FOR APPLYING A POWER FORCE TO A TOOTH

E. Glenn Glassman, 85 Paramus Rd., Paramus, N.J. 07652

Filed Aug. 27, 1980, Ser. No. 181,865
Int. Cl.[3] A61C *7/00*
U.S. Cl. 433—18 **11 Claims**



1. An orthodontic appliance for applying a power force to a tooth and including:

(a) a band secured to a tooth which is to be moved and/or repositioned by the application of a power force to said tooth;

(b) a plate member secured to this band and adapted to lay alongside the outside of said tooth and below said band;

(c) a tubular member providing a passageway therethrough of a selected size, said tubular member pivotally secured to the extending portion of said plate member;

(d) means for limiting the pivotal movement of said tubular member, said limiting means providing means for tilting the tubular member to a selected limit;

(e) a power force removably carried in or on the head of the user, this power force including a wire member slidable in the through passageway, and

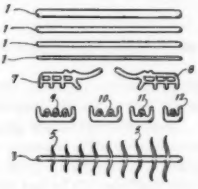
(f) means for limiting the travel of the power force wire in said tubular member so that a directed and desired movement of the tooth is made when the power force is positioned within this pivoted tubular member, the removal of said power force easily achieved when the power force is tilted for removal from the mouth.

4,272,241

METHOD AND ELEMENTS FOR THE FABRICATION OF A PROSTHETIC DENTAL APPLIANCE

Emanuel Crisalli, 10724 Baile Ave., Chatsworth, Calif. 91311

Filed Oct. 25, 1979, Ser. No. 88,006
Int. Cl.[3] A61C *13/22*
U.S. Cl. 433—171 **27 Claims**



1. A method of fabricating a prosthetic dental appliance, said method comprising the steps of:

taking an impression of existing dentition in the mouth of the eventual wearer of the appliance;

making a positive model of the dentition from the impression;

heat softening a resilient preformed plastic bar and resilient preformed plastic clasps;

fitting the bar and clasps to the positive model in a predetermined arrangement;

bonding the clasps to the bar to form a plastic dental appliance;

removing the plastic appliance from the positive model; and

fabricating a permanent dental appliance using the plastic appliance.

4,272,242

USE OF WATER-INSOLUBLE ALUMINOSILICATES IN TANNING PROCESS FOR THE PRODUCTION OF LEATHER

Juergen Plapper, Hilden; Klaus Schumann, Erkrath; Milan J. Schwuger, Haan; Heinz G. Smolka, Langenfeld; Emanuel Arndt, Düsseldorf; Emil Ruscheinsky, Leverkusen, all of Fed. Rep. of Germany, and Herman Jansen, Willingboro, N.J., assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,576

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732217; May 20, 1978, 2822073; May 20, 1978, 2822074; May 20, 1978, 2822075

Int. Cl.[3] **C14C** *3/04, 3/06*

U.S. Cl. 8—94.15 **32 Claims**

1. In the process of tanning uncured hides comprising subjecting uncured hides to the action of an aqueous liquor containing basic metal salt tanning agents including chrome tanning agents, and tanning auxiliaries for a time sufficient to tan said hides, rinsing and recovering leather, the improvement consisting essentially of employing a water-insoluble aluminosilicate, containing bound water of the formula

$$(Cat_{2/n}O)_x \cdot Al_2O_3 \cdot (SiO_2)_y$$

wherein Cat represents a cation selected from the group consisting of alkali metals and mixtures of bivalent metal ions with at least 5 mol% of the mixture of alkali metal ions, n represents an integer from 1 to 3 of the valence of the cation, x is an integer from 0.5 to 1.8 and y is an integer from 0.8 to 50, said aluminosilicates having an average particle size in the range of 0.1μ to 5 mm and a calcium binding power of from 0 to 200 mg CaO/gm of anhydrous active substance measured at 22° C., as partial replacement of said basic metal salt tanning agent including chrome tanning agents and tanning auxiliaries.

4,272,243

DYEING OF GRAIN LEATHER

Dietrich Lach, Friedelsheim; Rolf Streicher, Worms, and Franz Feichtmayr, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,847

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856628

Int. Cl.[3] **D06P** *5/00, 5/02*

U.S. Cl. 8—436 **3 Claims**

1. A process for dyeing grain leather with anionic dyes in the presence of surfactants by dyeing in a drum or dyeing apparatus for from 30 to 180 minutes at from 5° to 60° C. with a liquor length of from 50 to 500%, without subsequent moist storage, wherein the surfactant employed is a combination of

(a) an aliphatic alcohol of 9 to 24 carbon atoms oxyethylated with from 3 to 120 ethylene oxide units and

(b) an aliphatic primary or secondary amine of 8 to 20 carbon atoms per alkyl group oxylated with from 6 to 80 ethylene oxide units, in the weight ratio a:b from 1:4 to 4:1, and in a total amount of from 0.3 to 3%, based on the shaved weight.

4,272,244

DISPERSE DYEING OF POLYVINYL CHLORIDE-ACETELIZED POLYVINYL ALCOHOL FIBERS

Bernhard Schlick, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 6, 1979, Ser. No. 18,294

Claims priority, application Switzerland, Mar. 6, 1978, 2403/78

Int. Cl.[3] **D06P** *3/82, 1/64, 1/62*

U.S. Cl. 8—529 **18 Claims**

1. A process for dyeing with a disperse dyestuff a fibrous substrate whose fibres comprise a mixture of polyvinyl chloride and acetalized polyvinyl alcohol, which comprises dyeing the substrate at a temperature from 60° to 90° C. with a dye liquor containing a levelling carrier which is substantially removable from the substrate when the dyed or brightened substrate is subsequently submitted, after drying, to a dry heat treatment for a period of up to 120 seconds and at a temperature from 95° to 135° C.

4,272,245

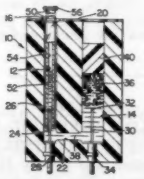
METHOD AND APPARATUS FOR ELECTRO-CHEMICAL MEASUREMENT

Howard Diamond, Ann Arbor; Steven E. Enzer, Brooklyn, and Joseph Flowers, Jr., Ann Arbor, all of Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.

Filed Dec. 4, 1978, Ser. No. 965,901

Int. Cl.[3] **G01N** *27/56*

U.S. Cl. 23—230 B **13 Claims**



7. A method of measuring the pH value of blood samples comprising:

placing a volume of the blood in a capillary tube;

covering a reference electrode and an indicating electrode with a bridging electrolyte solution;

measuring the potential difference between the electrodes, thereby providing a calibration potential;

bringing an open end of the capillary tube over said indicating electrode, thereby displacing the electrolyte from the electrode so that the blood engages the indicating electrode and the electrolyte acts as a bridge between the blood and the reference electrode; and

thereafter measuring the potential between the reference and indicating electrodes whereby the difference between this potential and the calibration potential provides an indication of the pH value of the blood.

4,272,246

METHOD AND APPARATUS FOR CHROMATOGRAPHIC QUANTITATIVE ANALYSIS

James S. Fritz; Douglas T. Gjerde, both of Ames, Iowa, and Gabriella Schmuckler, Haifa, Israel, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 20, 1979, Ser. No. 67,855

Int. Cl.[3] **G01N** *31/04, 27/08*

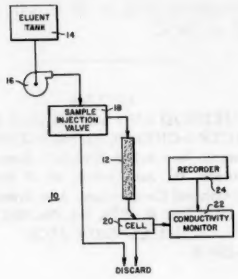
U.S. Cl. 23—230 R **5 Claims**

1. A method for chromatographic quantitative analysis of a plurality of anion species in a solution consisting essentially of

adding a solution containing a plurality of anion species to a polystyrene-divinylbenzene macroreticular anion exchange resin bed containing quarternary ammonium functional groups, the resin having a capacity of no more than 0.2 millequivalents per grams of resin;

passing an eluent having a conductance of less than about 10^{-4} mho/cm through the resin bed containing the plurality of anion species to chromatographically separate the plurality of anion species on the resin bed and for eluting the separated species individually from the resin bed, the conductivity of the eluent being less than the conductivity of the anion species being eluted; and

determining the conductivity of each separated anion species exiting from the resin bed, the conductivity being



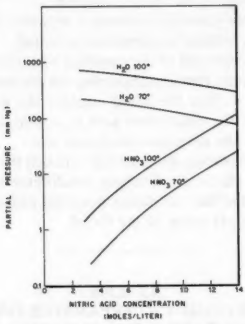
directly proportional the quantity of anion species present in the solution.

4,272,247

CONTINUOUS-FLOW FREE ACID MONITORING METHOD AND SYSTEM

James E. Strain, Kingston, and Harley H. Ross, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1980, Ser. No. 111,496
Int. Cl.[3] G01N *27/10, 27/06*
U.S. Cl. 23—230 R **10 Claims**



1. A method for measuring the free acid in an aqueous-acid solution, comprising the steps of:

vaporizing a portion of said acid solution at a constant temperature to generate an equilibrium vapor phase of said solution; and

determining the relative amounts of water and acid of said equilibrium vapor phase, said relative amounts being a measure of the free acid concentration of said solution.

4,272,248

NITRIC OXIDE INTERFERENCE FREE SULFUR DIOXIDE FLUORESCENCE ANALYZER

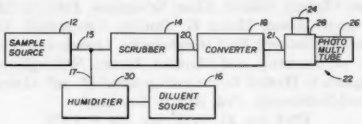
Radhakrishna M. Neti, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 26, 1979, Ser. No. 107,109
Int. Cl.[3] G01N *21/64*
U.S. Cl. 23—232 R **14 Claims**

1. A method for removing the fluorescence effect of nitric oxide in a fluorescence analyzer that measures sulfur dioxide comprising the steps of:

providing a sample stream of gas;

providing a diluent stream of gas containing at least one component having nitric oxide quenching properties;



intermixing said sample stream and said diluent stream to form a mixture; and

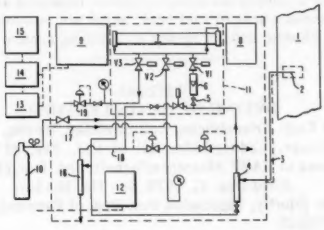
supplying said mixture to the fluorescence analyzer.

4,272,249

METHOD OF MONITORING OXYGEN CONCENTRATIONS IN GAS STREAMS

Joseph P. D'Antonio, Woodbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 28, 1980, Ser. No. 115,756
Int. Cl.[3] G01N *21/76*
U.S. Cl. 23—232 E **7 Claims**



1. A method of monitoring oxygen concentration in a gas mixture, said method comprising the following steps:

(1) passing at a predetermined pressure a sample of the gas to be analyzed through a leak-tight optical absorption cell having high transparency in the 325–600 nm range and maintained at a predetermined temperature above 100° C., said optical absorption cell being placed in the path of a visible light beam;

(2) sealing off said optical absorption cell at said predetermined pressure;

(3) establishing by means of a light detector the base absorbance of the gas to be analyzed or zeroing the light detector to eliminate said base absorbance;

(4) introducing into said optical absorption cell nitrogen oxide, NO, at a pressure at least equal to twice the partial pressure of oxygen in the gas sample, within the range of 0.01 to 0.2 MPa;

(5) determining the absorbance, at a predetermined wavelength within the 325–600 nm range, of nitrogen dioxide, NO_2, formed by reaction of oxygen with nitrogen oxide, NO; and

(6) calculating the oxygen concentration in the gas sample from said absorbance;

with the proviso that the above step (3) may be performed at any time prior to the introduction of nitrogen oxygen into the optical absorption cell, whether or not the cell is sealed off.

4,272,250

PROCESS FOR REMOVAL OF SULFUR AND ASH FROM COAL

Emmett H. Burk, Jr., Glenwood; Jui-Yuan Sun, South Holland, both of Ill., and Nestor J. Troncoso, Thousand Oaks, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 19, 1979, Ser. No. 50,263
Int. Cl.[3] C10L 9/00, 9/02
U.S. Cl. 44—1 SR 31 Claims

1. A process for reducing the sulfur and ash content of coal comprising the steps of:

(a) providing an aqueous slurry of coal particles containing ash and pyritic sulfur mineral matter;

(b) adding to the slurry a minor amount of hydrocarbon oil sufficient to effect aggregation of the coal particles;

(c) incorporating a gas into or on the coal-oil aggregates, whereby the apparent density of the coal-oil aggregates is modified;

(d) gravitationally separating the density-modified coal-oil aggregates from the aqueous slurry; and

(e) recovering coal-oil aggregates of reduced sulfur.

10. The process of claim 1 wherein the density-modified coal-oil aggregates are separated from the aqueous slurry by differential specific gravity means.

11. The process of claim 1 wherein the density-modified coal-oil aggregates are separated from the aqueous slurry by centrifugal means.

12. The process of claim 1 wherein the density-modified coal-oil aggregates are separated from the aqueous slurry by flotation means.

18. The process of claim 1 wherein, prior to aggregation, the slurried coal particles are contacted with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the ash and pyritic sulfur mineral matter under conditions whereby there is effected modification or alteration of at least a portion of the contained ash and pyritic sulfur mineral matter.

4,272,251

PROCESS FOR REMOVING SULFUR FROM COAL

LaVern H. Beckberger, Markham, and James L. Barbour, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sep. 10, 1979, Ser. No. 74,033
Int. Cl.[3] C10L 9/00, 9/06
U.S. Cl. 44—1 SR 35 Claims

1. A process for reducing the sulfur content of coal, by the treatment of coal particles, contained in an aqueous slurry of floatable coal-oil particles, with an oxygen-containing gas at elevated temperature and pressure, comprising the steps of:

(a) feeding the oxygen-containing gas and the aqueous slurry of floatable coal-oil particles, at process pressure, to a bottom zone of a vertically disposed, elongated reactor vessel;

(b) passing the gas and aqueous slurry in cocurrent flow upwardly through a baffled reaction zone, maintained at reaction temperature and pressure, the baffled reaction zone having a plurality of baffle plates spaced therethrough generally normal to the reactor wall, each baffle plate having a configuration generally conforming to the internal diameter of the reactor vessel and a plurality of apertures disposed about the baffle plate, to provide a total aperture area equal to from about 3% to about 28% of the vessel cross-sectional area as free area;

(c) continuously withdrawing the aqueous slurry and spent gas from a top zone of the reactor vessel; and

(d) recovering from the aqueous slurry coal-oil particles wherein the coal particles possess a reduced sulfur content.

4,272,252

FIRE LIGHTING DEVICE

Donna G. Altman, Atlanta, Ga., assignor to Solid Safety, Inc., Atlanta, Ga.

Filed May 7, 1979, Ser. No. 36,841
Int. Cl.[3] C10L 11/00, 11/06
U.S. Cl. 44—40 7 Claims

1. A fire lighting device comprising a cellulosic fibrous material having a combustible volatile petroleum distillate absorbed therein, said fibrous material being porous and having air contained therein, said fibrous material having a density of approximately one to two grams per cubic centimeter, a burnable envelope, said fibrous material with said petroleum distillate absorbed therein being sealed within said burnable envelope and substantially filling said envelope, said burnable envelope being impervious to vapors of said petroleum distillate, said envelope comprising a plurality of layers of material, at least one of said plurality of layers of material being cellophane for providing an easily burnable quality to said burnable envelope, and one layer of said plurality of layers of material being polyethylene for retarding the burning of said burnable envelope.

4,272,253

STABLE COAL-IN-OIL SUSPENSIONS AND PROCESS FOR PREPARING SAME

Johann G. D. Schulz, Pittsburgh, and John A. Cobler, Harwick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 19, 1980, Ser. No. 122,441
Int. Cl.[3] C10L 1/32
U.S. Cl. 44—51 44 Claims

1. A suspension containing coal, hydrocarbon oil, water and the product resulting from the reaction of (1) polycyclic, polycarboxylic acids obtained as a result of the oxidation of coal with (2) a base.

23. A process for preparing a suspension which comprises mixing an aqueous mixture containing (I) the product resulting from the reaction of (1) polycyclic, polycarboxylic acids obtained as a result of the oxidation of coal with (2) a base with (II) coal and (III) hydrocarbon oil for a time sufficient to obtain a suspension.

4,272,254

HYDROCARBON FUEL HAVING IMPROVED COMBUSTION EFFICIENCY

Takashi Minezaki, 2-18-14 Hon-cho, Shibuya-ku, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,293
Claims priority, application Japan, Mar. 20, 1979, 54-32510
Int. Cl.[3] C10L 1/28
U.S. Cl. 44—70 2 Claims

1. A hydrocarbon fuel having improved combustion efficiency which comprises a mixture of said hydrocarbon fuel and an amount effective to increase the combustion efficiency of said fuel of an organic silicon compound having the formula $(SiCH_2CH_2COOH)_nO_3$.

4,272,255

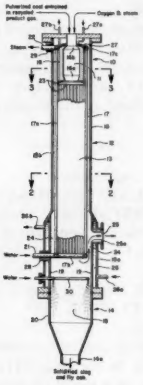
APPARATUS FOR GASIFICATION OF CARBONACEOUS SOLIDS

Ralph L. Coates, Salt Lake City, Utah, assignor to Mountain Fuel Resources, Inc., Salt Lake City, Utah

Filed Jul. 19, 1979, Ser. No. 58,764
Int. Cl.[3] C10J 3/20
U.S. Cl. 48—63 2 Claims

1. A multiple stage, downflow gasifier for converting carbonaceous solids to an intermediate heating value fuel gas or synthesis gas, comprising a first stage having refractory means defining a combustion chamber; a second stage below said first stage and having a relatively elongate heat recovery chamber for solidifying molten reactants, said chamber being defined by an annular, water-wall type of heat exchanger within a pres-

sure shell; and a third stage below said second stage and having water quench means, the three stages being substantially aligned along a substantially vertical axis in common and interconnecting along said axis, and the water-wall heat exchanger and pressure shell of the second stage extending upwardly about said combustion chamber to define said first stage; means secured to said water-wall heat exchanger for receiving and supporting said refractory means; means for introducing reaction components that include a combustion-supporting gas and carbonaceous particles into the upper end of said combustion chamber under pressure so they will pass through said first stage and into and along the heat recovery chamber of the second stage; discharge means for product gas located in said



pressure shell above the lower end of said water-wall heat exchanger, the lower end portion of said pressure shell being spaced from the lower end portion of said water-wall heat exchanger to define an annular passage for the flow of product gas to said discharge means, and the portion of the pressure shell located above the annular passage for the flow of product gas to the discharge means being in communication with said annular passage, spaced from the water-wall heat exchanger a smaller distance than the lower end portion thereof, and terminating in a closed upper end to define a relatively narrow, annular, substantially dead gas chamber about the said water-wall heat exchanger substantially throughout its height; and discharge means at or near the lower end of the third stage for solids quenched in said third stage.

4,272,256

METHOD FOR HEATING OXYGEN CONTAINING GAS IN CONJUNCTION WITH A GASIFICATION SYSTEM

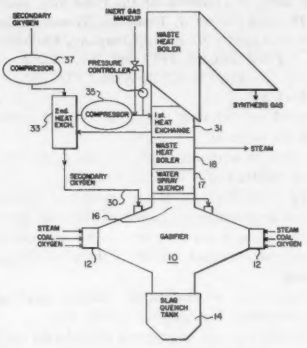
Dimitri M. Mitsak, Edgeworth, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.

Filed Oct. 15, 1979, Ser. No. 84,982
Int. Cl.[3] **C10J** *3/46*
U.S. Cl. 48—206 **2 Claims**

1. A process for the gasification of a carbonaceous fuel comprising:

(a) feeding a mixture of primary oxygen, steam and fuel to a reaction zone to produce a synthesis gas from said mixture;

(b) heating secondary oxygen indirectly from said synthesis gas wherein said step of heating said secondary oxygen includes removing heat from said synthesis gas in a first heat exchanger by heat exchange with a heat transfer gas which does not form an explosive mixture with the synthesis gas, and transferring the heat from the heat transfer gas to said secondary oxygen in a second heat exchanger and circulating the heat transfer gas between said first and second heat exchangers at a pressure which is at all times greater than the pressure of the secondary oxygen to



prevent flow of secondary oxygen into the synthesis gas in the event of a leak in the second heat exchanger; and

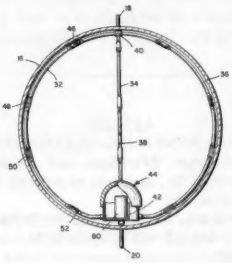
(c) feeding said secondary oxygen to said reaction zone.

4,272,257

LIQUID-VAPOR SEPARATOR

M. Edmund Ellion, Arcadia; J. Ward Putt, Los Angeles, and John J. Montich, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 6, 1976, Ser. No. 747,469
Int. Cl.[3] **B01D** *53/22*
U.S. Cl. 55—38 **4 Claims**



1. The method of separating liquid from vapor in a substantially zero g environment comprising the steps of:

providing an etched flow passage so that it extends from a first wall to a second wall with the flow passage having sufficiently small dimension that liquid is passed through the passage in preference to vapor due to liquid surface tension forces; and

positioning the passage in a tank for containing liquid and vapor so that liquid is preferentially delivered through the passage for delivery from the tank.

2. The method of separating liquid from vapor in a substantially zero g environment comprising the steps of:

placing and removing liquid from a tank so that both liquid and vapor are present in the tank;

forming a flow passage having a flow direction therethrough and a sufficiently small dimension normal to the flow direction so that liquid is passed through the passage in preference to vapor due to liquid surface tension forces;

positioning the passage in the tank so that one end of the passage is exposed to the interior of the tank and the other end of the passage is connected to a gallery for delivery of liquid from the tank so that liquid delivery in preference to vapor delivery is achieved from the tank; and

separating liquid from vapor in the tank by preferentially passing liquid through the flow passage and delivering the liquid into the gallery.

4,272,258

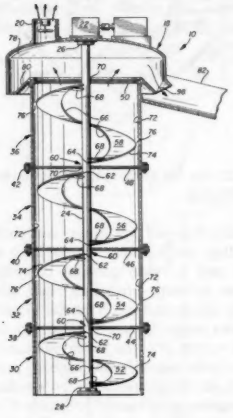
MUD DEGASSER METHOD AND APPARATUS

Wiley M. Shifflett, P.O. Box 133, Mentone, Tex. 79754

Filed Nov. 26, 1979, Ser. No. 97,407

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—52 **12 Claims**



1. A mud degasser comprising a main cylindrical housing having an inlet formed at the bottom thereof into which gasified mud can flow, and an outlet at the upper end thereof from which degassed mud can flow; a main shaft including means rotatably supporting said shaft along the axial centerline of the main housing; an auger for said shaft, said auger having a flight which commences adjacent the inlet end of the housing and terminates adjacent the outlet end of said housing; said flight having an outer edge adjacent to and spaced from the inner wall of the housing, and an inner edge spaced from the shaft, thereby forming a longitudinally extending passageway along the axial centerline of the housing, means by which said auger flight is affixed in spaced relationship to said shaft;

so that rotation of the shaft causes mud to flow from said inlet to said outlet, while any entrained gases are forced to flow towards the axial passageway formed between the shaft and the inner edge of the flight.

7. Method of removing compressible fluids from drilling fluid comprising the steps of:

(1) arranging a cylindrical housing with the longitudinal central axis thereof vertically disposed;

(2) supporting an auger flight in spaced relationship respective to an auger shaft; and rotatably supporting the auger shaft along the axial centerline of the housing, thereby leaving a central axial passageway between the shaft and auger flight through which gases can flow within the housing; wherein the auger flight occupies an outer annular passageway within the housing through which mud is forced to flow;

(3) arranging the auger flight of step (2) into a plurality of auger flights and positioning the flights in spaced relationship to one another to leave a space between adjacent flights;

(4) placing a screen means perpendicular to the shaft and between adjacent flights;

(5) flowing gas-ladened mud into the lower end of the housing, up through the outer annular passageway of the housing interior, and out of the upper end of the housing by rotating the auger shaft to cause mud to flow due to the action of the auger flight;

(6) said mud describes an upwardly opening cone which has an apex located adjacent the lower end and along the axial centerline of the housing, so that a pressure gradient is formed transversely across the flowing mud, to cause gases to flow towards the cone.

4,272,259

GAS GETTERING SYSTEM

Michael F. Patterson, Clarence; Harry Cheung, Buffalo, and David I. J. Wang, New York, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 707,335, Jul. 21, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,340

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—74 **5 Claims**

1. A method of evacuating a vacuum enclosure comprising the steps of:

(a) providing a fluid-tight container holding active getter and non-sorbable gas at a pressure of at least about one atmosphere;

(b) establishing gas flow communication through a wall of said container between said active getter and the container-surrounding environment by passage means in said container wall, such that the ratio of the vacuum flow conductance of the gas flow passage means, in liters/sec., to the mass of said active getter held in said container, in grams, is in the range of from about 6.0×10^{-8} to about 1.0×10^{-2};

(c) positioning the container in said enclosure for gas flow communication between said active getter and the enclosure environment;

(d) thereafter removing gas from the enclosure and from the positioned container through said passage means for evacuation thereof, in an amount sufficient to reduce the pressure in said enclosure and container to subatmospheric pressure; and

(e) sealing the evacuated enclosure.

4,272,260

TORNADO-TYPE SEPARATOR

Heinrich Klein; Rudolf Pieper, both of Erlangen, and Eduard Weber, Nuremberg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,601

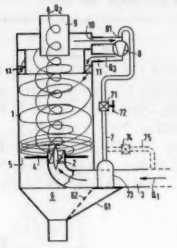
Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820233

Int. Cl.³ B04C *3/06, 5/18*

U.S. Cl. 55—265 **9 Claims**

1. In a tornado-flow vortex generator assembly for separating particulates from gases, having a plurality of parts including a cylindrical vortex chamber, an inlet tube for raw gas coaxially disposed in the vortex chamber and terminating in a nozzle for providing an advance rotation in a flow of the raw gas therethrough, a hopper connected to the vortex chamber, a hopper diaphragm surrounding the inlet tube and positioned in the vicinity of the vortex-chamber casing, with an annular particulate-discharge slot communicating with a space within

the hopper wherein a given pressure exists, a clean-gas outlet disposed in the vortex chamber spaced from and opposite the raw gas inlet tube, an auxiliary-gas outlet surrounding the clean-gas outlet, and an auxiliary-gas inlet disposed at the vortex-chamber casing for blowing auxiliary gas into the vortex chamber at an inclination and tangentially to the casing thereof and connected by a blower to the auxiliary-gas outlet, the improvement comprising means for connecting to the hopper space a pressure source having a pressure lower than the given pressure existing in the hopper space, said means comprising a line having a control valve connected therein.



4,272,261

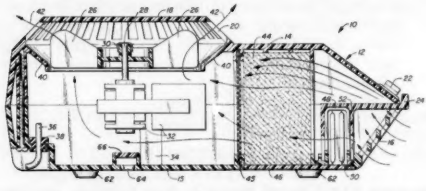
AIR PURIFYING DEVICE

Patrick E. Lynch, Jr., and James M. Wimsatt, both of 155 Pintail Way, Carson City, Nev. 89701

Filed May 1, 1980, Ser. No. 145,521

Int. Cl.[3] **B01D** *53/34;* **A61L** *9/01*

U.S. Cl. 55—279 **8 Claims**



1. An air purifying system comprising:

a housing including an air inlet, an air outlet, and an internal flow path from the inlet to the outlet;

fan means within the housing adapted to move air through the housing along the flow path and out of the housing through the outlet;

a filter interposed in and spanning the flow path in the housing to filter particulate matter from the air passing through the housing;

an odor neutralizing chamber within the housing partially interposed in the flow path and in flow communication with the flow path and containing an odor neutralizing chemical which vaporizes in the presence of air; and

means for controlling the amount of the odor neutralizing chemical vapor which exits the chamber and enters the air flowing through the housing.

4,272,262

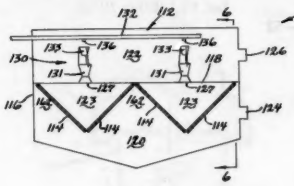
GAS-SEPARATION FILTER DEVICE

Monroe Britt, and Karl L. Westlin, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Sep. 27, 1979, Ser. No. 79,564

Int. Cl.[3] **B01D** *46/04*

U.S. Cl. 55—302 **8 Claims**



1. A filter device for removing particulates from a dirty gas stream, comprising:

a housing;

a horizontally disposed gas impervious partition in the housing dividing the housing interior into an upper plenum chamber and a lower plenum chamber, said partition having an aperture providing fluid communication between the upper and lower plenum chambers;

dirty gas inlet means in said housing providing ingress for a dirty gas stream into the lower plenum chamber;

cleaned gas outlet means in said housing providing egress for a cleaned gas stream from the upper plenum chamber;

a filter supporting structure of generally V-shaped cross-sectional configuration secured to said partition;

said supporting structure having opposing open side walls opening into the lower gas plenum and an upper opening opening into the upper plenum chamber through the aperture in said partition;

a plurality of adjacent panel filters nestled within the supporting structure across each of the open sides of the supporting structure to form a generally V-shaped filter bank providing a filter barrier between the upper and lower plenum chambers;

filter retaining means nestled within the filter bank and generally contiguously engaging each of the filter panels to secure the panels to the supporting structure in dust-tight sealing relation;

a first venturi nozzle communicating with the aperture in the horizontal partition for providing a flow path for gases between the upper plenum chamber and the cleaned gas compartment;

a second converging nozzle disposed in the upper plenum chamber in coaxial alignment with the first venturi and spaced in an axial direction from the first venturi thereby creating a space between them; and,

high energy cleaning gas emitting means spaced above the second converging nozzle adapted to direct a high energy cleaning gas jet axially into the second converging nozzle for pressurizing the cleaned gas compartment to reverse flush clean the panel filters of separated particulates.

4,272,263

FILTER ARRANGEMENT

Terence M. Hancock, Prospect, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

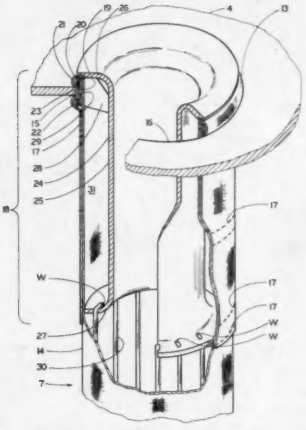
Filed May 21, 1979, Ser. No. 40,693

Int. Cl.[3] **B01D** *46/02*

U.S. Cl. 55—377 **10 Claims**

1. For a bag house including a plenum having an apertured bag support plate including an aperture of a predetermined diameter, a filter arrangement adapted to be connected with the plate in flow-through communication with the plenum through the plate aperture, comprising:

a tubular filter having a flexible end portion;
a flexible ring member connected with said flexible end portion, said ring member removably embracing the marginal edge of the plate aperture to secure the ring member and the filter to the plate;
a venturi element extending through said ring member into the interior of the filter;
said venturi element including an inwardly recessed throat portion, an outwardly protruding annular shoulder proximate one end of said throat portion, and an attachment portion spaced from said shoulder within the filter;
said annular shoulder axially overlying the ring member and being carried thereby to support the venturi element within the filter, the outermost diameter of said shoulder



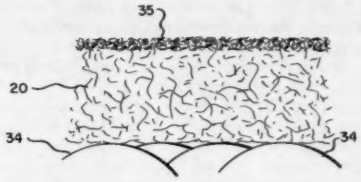
being less than the diameter of the plate aperture to accommodate withdrawal of the venturi element from either side of the plate upon removal of the ring member;
said throat portion accommodating manipulative flexure of said ring member upon selective axial displacement of the venturi element with respect to the plate attendant to installation and removal of the filter arrangement;
filter support means carried by said attachment portion within the filter; and
said venturi element being of an elongated tubular configuration having axially outwardly flared end portions, one of said end portions providing said annular shoulder and the other of said end portions providing said attachment portion.

4,272,264
ADSORBENT PACKAGE

John S. Cullen, Buffalo, and Paul W. Huber, Depew, both of N.Y., assignors to Multiform Desiccant Products, Inc., Buffalo, N.Y.

Continuation of Ser. No. 495,883, Aug. 8, 1974, abandoned, which is a continuation of Ser. No. 293,677, Sep. 29, 1972, abandoned. This application Jul. 9, 1976, Ser. No. 703,979
Int. Cl.[3] B01D *27/02, 53/04*
U.S. Cl. 55—387 **14 Claims**

1. An adsorbent package comprising adjacent continuous foraminous wa[5] portions of thermoplastic fibrous meltable and heat-fusible sheet material composed of fibers and defining an enclosure, adsorbent material confined completely within said enclosure, superimposed edge portions on said wall portions, said superimposed edge portions including fibers which are melted out to and including the outermost edges of said wall portions, said melted fibers at said superimposed edge portions being completely fused together to provide a welded seam joining said superimposed edge portions, said wall portions including an outer surface, fiber tie-down means for tying down the fibers of said material on substantially said entire outer surface of said wall portions, said fiber tie-down means permitting said foraminous fibrous sheet material to remain in condition to permit flow of fluids therethrough, whereby said melted edge portions at said completely fused welded seam

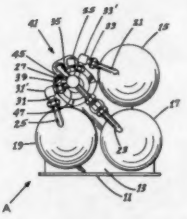


and said tied-down fibers on said outer surface of said wall portions provide a substantially completely tied-down outer surface on said package to prevent fibers of said fibrous sheet material from linting into the fluid in which said adsorbent package is placed.

4,272,265
APPARATUS FOR PRESSURE SWING GENERATION OF OXYGEN

Fred P. Snyder, St. Louis County, Mo., assignor to Essex Cryogenics of Missouri, Inc., St. Louis, Mo.

Filed Jun. 22, 1979, Ser. No. 51,208
Int. Cl.[3] F16K *11/02;* **B01D** *53/06*
U.S. Cl. 55—389 **7 Claims**



1. For use in a system for oxygen generation including a plurality of vessels each containing a molecular sieve bed and each having a first port for providing an oxygen-enriched effluent from the bed and a second port for alternate pressurizing and purging of the bed, rotary control valve apparatus comprising a valve housing, a shaft rotatably journalled in said housing and adapted for being driven for rotation, said housing providing first and second chambers spaced along the length of said shaft, respective pressure and purge control valve rotors carried by said shaft for rotation within the respective chambers, said valve housing including a pressurized air inlet communicating with said first chamber for admitting pressurized air thereto, and a purge gas outlet communicating with said second chamber for discharging of purge gases therefrom, said housing providing a plurality of passages extending between said chambers, said passages corresponding in number to said vessels and extending within said housing in lengthwise relationship between said first and second chambers, said passages being spaced at equal intervals around the axis of rotation of said shaft, said housing including a plurality of ports communicating with respective ones of said passages and adapted for being interconnected with respective second ports of said vessels, each of said rotors comprising a valve port adapted to provide communication between the respective chamber and each of said passages in succession upon rotation of said rotors by said shaft, said rotor valve ports being presented in angular

relationship to one another and to said passages for causing pressurized air to be provided successively through at least one of said passages to a corresponding vessel while permitting purge gases to flow through at least one other of said passages from a corresponding vessel for first pressurizing and subsequently purging said vessels in cyclic manner upon rotation of said shaft, the valve port of said purge control valve rotor being of greater relative dimension than the valve port of said pressure control vave rotor to cause communication by said purge control valve rotor with respective ones of said passages for a proportionately greater time than said pressure control valve rotor port, said ports being positioned angularly relative to one another for permitting only one of said ports to be in communication with any given one of said passages, said purge control valve rotor port being of sufficient angular dimension for providing communication concomitantly with at least two of said passages whereby purging of a corresponding two of said vessels may overlap during a single revolution of said shaft.

4,272,266

APPARATUS FOR THE SEPARATION OF GAS MIXTURES

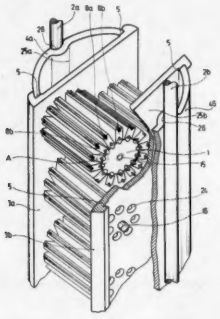
Gerd Tybus, Poing, and Hartmut Neuking, München, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,274

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815050

Int. Cl.³ B01D *53/24*

U.S. Cl. 55—392 **16 Claims**



1. Apparatus for the separation of gas mixtures having different molecular weights into a heavy fraction and a light fraction comprising: generally cylindrical body means having outer circumferential surface means; longitudinal deflection channel means formed in said outer surface means; gas channel defining means arranged to define together with said body means a first plurality of gas guide channels spaced apart circumferentially about said body means and a second plurality of gas guide channels interposed between pairs of said first plurality of gas guide channels; said gas channel defining means including pairs of tapered legs extending into said deflection channel means and having terminal edges spaced from said deflection channel means and cooperating therewith to separate said gas mixture into a light fraction and a heavy fraction, with said light fraction flowing to between adjacent pairs of said gas guide channels and with said heavy fraction flowing into said second plurality of gas guide channels; inlet means for introducing a gas mixture into said first plurality of gas guide channels; outlet means for said second plurality of gas guide channels; and outlet means for said light fraction in flow communication to between adjacent pairs of said gas guide channels.

4,272,267

GAS FILTER

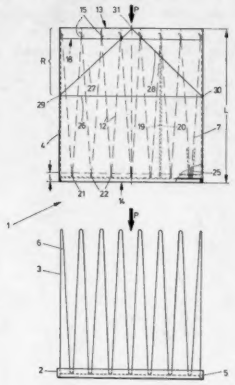
Grietinus R. L. Kamps, Ter Apel; Jan S. P. Moltzer, Dalerveen, and Pieter J. Platteeuw, Veenoord, all of Netherlands, assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Nov. 13, 1979, Ser. No. 93,926

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901414

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—499 **9 Claims**



1. A gas filter, in particular a room air filter, comprising encircling walls forming a square frame and an interchangeable filter package including a gas entrance and a gas discharge port and containing a filter web with a folded zig-zag configuration for forming a plurality of proximate filter pockets, said filter web being secured between the encircling walls of said frame, and further comprising a support grid for receiving the same which is mounted in the frame and which has a shape complimentary to the folds of said filter web, wherein all of said encircling walls of said frame have a stiff construction and together form a rigid container, said gas entrance port being adapted to be closed by bending in and folding over a portion of each of the encircling walls each of said walls having means which forms a marginal strip in each wall adjacent to said port, and tension means anchored to two of the encircling walls opposing one another securing the folds of the filter web adjacent the gas discharge port.

4,272,268

CHEMICAL HEAT PUMP

Leonard Greiner, 2853-A Hickory Pl., Costa Mesa, Calif. 92626

Filed Oct. 17, 1977, Ser. No. 842,702

Int. Cl.³ F25B *27/00, 17/08*

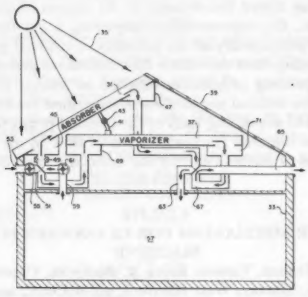
U.S. Cl. 62—2 **28 Claims**

1. A chemical heat pump, comprising:

a vaporizer container storing a material to be vaporized having a length or width which is at least ten times its thickness, said container being evacuated;

a container storing a vapor absorptive chemical having a length or width which is at least ten times its thickness, said container being evacuated, said vapor absorptive chemical expanding and contracting as it absorbs and desorbs vapor, respectively, said container being subjected to a higher outside pressure than the evacuated inside pressure and having a sufficiently thin structure to permit said higher outside pressure to flex said structure during such expansion and contraction to prevent formation of voids in said vapor absorptive chemical;

means exchanging heat through the walls of said vaporizer container and said chemical container; and



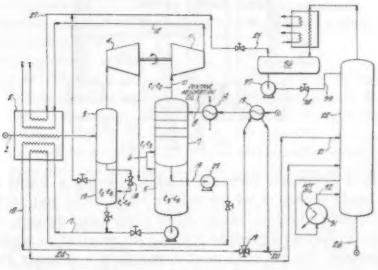
a vapor conduit interconnecting said vaporizer container and said chemical container.

4,272,269

CRYOGENIC EXPANDER RECOVERY PROCESS

James D. Hammond, and EH Deng, both of Irvine, Calif., assignors to Fluor Corporation, Irvine, Calif.

Filed Nov. 23, 1979, Ser. No. 96,662
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—17 **12 Claims**



1. A process for the recovery of hydrocarbons from a gaseous hydrocarbon containing feedstream comprising:

(1) partially condensing such feedstream to form first vapor and liquid streams,

(2) separating said vapor and liquid streams and expanding said separated vapor stream, thereby cooling and partially condensing the same to form second vapor and liquid streams,

(3) separating said second vapor and liquid streams and subjecting said second vapor stream to an absorption step, whereby propane and heavier hydrocarbons from said second vapor stream are absorbed from said vapor, and are thereafter distilled and recovered as liquid product, with the other constituents of said second vapor stream remaining in vapor form and subsequently being recovered as product gas,

(4) passing said first liquid stream to a second separation step, thereby producing additional vapor and liquid streams,

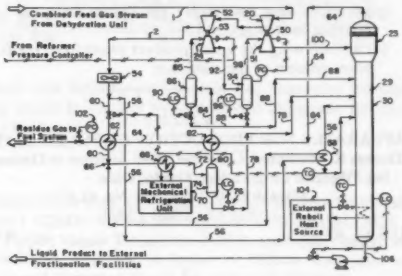
(5) combining said liquid stream from step (4) with said second liquid stream and passing the combined stream to a distillation step, whereby methane and ethane are recovered therefrom as gaseous product, and said vapor stream from step (4) being thereafter combined with said gaseous product from said distillation step and recovered as gaseous product.

4,272,270

CRYOGENIC RECOVERY OF LIQUID HYDROCARBONS FROM HYDROGEN-RICH

Robert D. Higgins, Houston, Tex., assignor to Petrochem Consultants, Inc., Houston, Tex.

Filed Apr. 4, 1979, Ser. No. 26,809
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—24 **2 Claims**


Combined Feed Gas Stream From Dehydration Unit
From Reformer Pressure Controller
Residue Gas to Fuel System
External Mechanical Refrigeration Unit
External Reboil Heat Source
Liquid Product to External Fractionation Facilities

1. A process for cryogenic recovery of hydrocarbon liquid from gas composed predominantly of hydrogen, comprising:

(a) feeding the gas to one or more compressor/expander units, each unit having compressor means and expander means mounted and driven on a common shaft;

(b) compressing the gas feed in the compressor of each compressor/expander unit;

(c) cooling the compressed gas obtained from step (b) in a heat exchanger;

(d) transmitting a portion of the cooled feed gas obtained in step (c) to a stabilizer side reboiler wherein the feed gas is further cooled;

(e) transmitting the remaining portion of the feed gas obtained in step (c) to a heat exchanger and thermally contacting and cooling said feed gas therein with a cooler residue gas product;

(f) recombining and transmitting the total feed gas portions cooled in steps (d) and (e) to a refrigerant chiller and further cooling the recombined feed gas therein;

(g) transmitting the cooled feed gas obtained from the refrigerant chiller in step (f) to a separator vessel wherein a liquid fraction and a vapor fraction are separated;

(h) transmitting the liquid fraction obtained from the separator in step (g) to the fractionation column of a stabilizer comprising a separator and said fractionation column situated beneath and in communication with the separator, wherein a vaor phase is separated from said liquid fraction;

(i) transmitting the vapor fraction obtained from the separator in step (g) to another heat exchanger wherein it is further cooled by the vapor from the separator of step (h), said vapor from the separator of step (h) being thermally contacted with the vapor fraction from step (g) prior to being transmitted to the heat exchanger in step (e);

(j) transmitting the further cooled vapor fraction obtained from step (i) to an expander inlet separator wherein liquid is separated from the cooled vapor fraction;

(k) transmitting the liquid separated from cooled vapor fraction in step (j) to an upper feed stage of the fractionation column;

(l) transmitting the vapor separated in step (j) to the expander of the first of said one or more compressor/expander units, and transmitting the outlet stream from each but the last expander directly to a liquid/vapor separator without cooling, and without further temperature modification transmitting only the vapor portion from the separator directly to the next expander, and transmitting the separa-

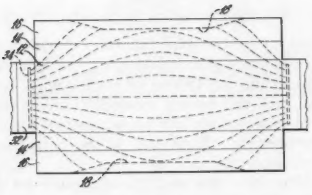
tor liquids to one or more upper feed stages of the fractionation column;
(m) transmitting the cold, two-phase effluent stream from the final expander in step (l) to the separator section of the stabilizer;
(n) withdrawing the vapors rising from the separator section of the stabilizer to form the cold residue gas stream;
(o) transmitting the residue gas stream obtained in step (n) to the heat exchanger used in step (i) and from there to the heat exchanger used in step (e);
(p) withdrawing the residue gas stream from the heat exchanger in step (e); and
(q) withdrawing the liquid product phase from the fractionation column of the stabilizer.

4,272,271

APPARATUS FOR PRODUCTION OF MINERAL FIBERS

Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 30, 1979, Ser. No. 61,572
Int. Cl.[3] C03B *37/02*
U.S. Cl. 65—1 **6 Claims**



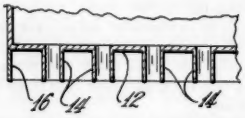
1. An electrically heated bushing for the manufacturer of glass fibers comprising:
a. an electrically conductive bottom wall having orifices for the passage of streams of molten glass therethrough for attenuation into fibers;
b. upwardly extending, electrically conductive, sidewalls, each sidewall having an outwardly extending, electrically conductive flange; and
c. an electrically conductive material added to a portion of each flange to lower the electrical resistance of said portion to establish a desired electrical current flow distribution in the bottom wall, the material generally not extending along the entire length of the flange such that more of the material is in the central region of the flange length then in the end regions of the flange length.

4,272,272

METHOD AND APPARATUS FOR PRODUCTION OF MINERAL FIBERS

Lawrence J. Grubka, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 10, 1979, Ser. No. 74,357
Int. Cl.[3] C03B *17/02*
U.S. Cl. 65—1 **7 Claims**



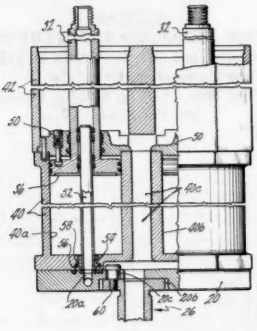
1. In an apparatus for forming mineral fibers comprising a stream feeder having a plurality of orificed projections depending from the feeder floor for flowing streams of molten mineral material, means for attenuating fibers from the streams of molten mineral material, and means for directing gas upwardly into contact with the streams of molten mineral material at a velocity and in an amount effective to convey away from the streams sufficient heat to render the material of the streams attenuable to fibers without appreciably disturbing the ambient gas above the streams in the region of the orificed projections, the improvement comprising a gas flow barrier extending peripherally of the plurality of orificed projections and depending from the feeder floor a distance generally equal to the depending projections adapted to restrict flow of gas adjacent the orificed projections in the region between feeder floor and the depending ends of the orificed projections while leaving the directed gas unrestricted to flow in the region of the streams of material exiting the orificed projections.

4,272,273

PLUNGER MECHANISM FOR GLASSWARE FORMING MACHINE

Albert J. Trahan, Vernon; Bruce R. Beckwith, Unionville, and David B. Murray, West Hartford, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 26, 1979, Ser. No. 60,769
Int. Cl.[3] C03B *9/26, 11/12*
U.S. Cl. 65—167 **7 Claims**



1. In a glassware forming machine having a frame and a blank mold station at which mating blank mold and neck ring mold assemblies cooperate to define at least one parison cavity, said cavity having a plunger opening for receiving a reciprocable plunger, the improvement comprising a plunger mechanism to be mounted in the machine frame so that the plunger registers with the plunger opening, a base plate for said plunger mechanism, means supporting said base plate in the machine frame for limited horizontal floating movement with respect to the machine frame, said base plate supporting means including a fixed foot and a vertically movable member adjustably connected to said foot for achieving said vertical movement and also connected to said base plate for said floating movement, said plunger mechanism including lower plunger cylinder means with a flat bottom surface abutting said base plate and a plunger cooling tube provided centrally of a cylindrical piston chamber defined by said cylinder means, an annular plunger piston including an actuator rod extending upwardly from said annular piston, said rod being of annular cross section and telescopically receiving said cooling tube at its lower end and adapted to support said plunger at its upper end, said plunger mechanism including upper casing means secured to said lower cylinder means and defining a generally cylindrical cavity above said plunger piston chamber, plunger positioning and guiding elements in said casing cavity, said casing means fitting loosely in an opening provided for it in the machine frame, a positioning plate snugly received around said casing, fastener means for releasably securing said positioning plate to the machine frame, and at least one locking stud securing said casing means to said base plate independently of said positioning plate, said base plate having at least one upwardly open port defined in a planar portion of its upper surface, which port

communicates with the lower end of said cooling tube, and the lower end of said tube not projecting below said flat bottom surfaces of said cylinder means.

4,272,274

SLOTTED GLASS SHEET SHAPING MOLD

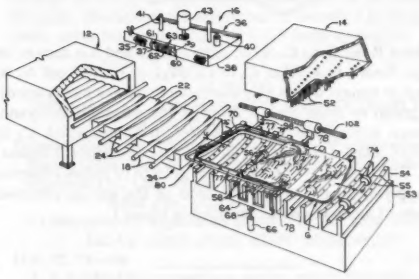
Robert G. Frank, Murrysville; Rudy Canonaco, Cheswick, and Richard V. Posney, Freeport, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 954,696, Oct. 25, 1978, Pat. No. 4,197,108. This application Sep. 25, 1979, Ser. No. 78,627

The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—273 **6 Claims**



1. An apparatus for shaping glass sheets, comprising:

a shaping station having a plurality of elongated glass sheet conveying members;

a shaping mold comprising:

a solid block of refractory material having an upward facing shaping surface defining a shaping area having dimensions larger than those of said sheet, said shaping surface having a plurality of smooth, continuous, curved, upward facing, spaced elongated shaping members defining a common curve having a given maximum depth of curvature; and

a continuous elongated grooved portion between adjacent shaping members and generally aligned with said elongated conveying members, the depth of the grooved portion being greater than the given maximum depth of curvature of the shaping members; and

means for moving said mold upward toward said conveying members to move said shaping members between adjacent conveying members.

4,272,275

ALIGNING GLASS SHEETS ON AN OUTLINE MOLD PRIOR TO TRANSFER TO SHAPING MOLD

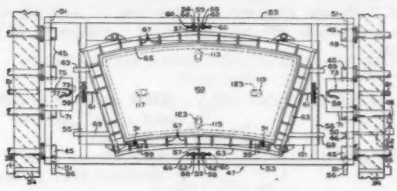
Thomas J. Reese, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 91,002

Int. Cl.³ C03B *23/025, 23/03*

U.S. Cl. 65—273 **7 Claims**

1. Apparatus for bending glass sheets to a complicated curvature comprising an outline mold having an upwardly facing outline shaping surface and a solid shaping mold having an outline slightly smaller than that of said outline shaping surface and provided with an upwardly facing shaping surface of continuous extent, a plurality of glass edge alignment pins adjacent said outline mold to the outside of said outline shaping surface, first means for supporting each of said glass edge alignment pins in a raised position where said alignment pins abut an edge of one or more glass sheets supported on said outline mold for sag bending, second means for supporting each of said glass edge alignment pins in a lower position where said alignment pins are entirely below said outline shaping surface and means coacting with said first alignment pin supporting means to suddenly and automatically lower said



alignment pins from support by said first alignment pin supporting means to support by said second alignment pin supporting means.

4,272,276

METHOD FOR THE CONTROL OF GERMINATION OF PLANT SEEDS AND GROWTH OF THE SEEDLINGS

Jozsef Szejtli; Magda Tetenyi nee Erdösi, and Peter Tetenyi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

Filed May 21, 1979, Ser. No. 40,957

Claims priority, application Hungary, May 23, 1978, CI-1830

Int. Cl.³ A01N *43/16*

U.S. Cl. 71—76 **5 Claims**

1. A method of controlling seed germination and seedling growth which comprises the step of contacting plant seeds with an effective amount of cyclodextrin solution or solid cyclodextrin selected from the group consisting of alpha-cyclodextrin, beta-cyclodextrin, gamma-cyclodextrin and mixtures of same in a composition containing 0.1 to 95% of cyclodextrin.

4,272,277

2-BUTYL-2-ETHYL-1,3-PROPANEDIOL AS A CHEMICAL PINCHING AGENT

Sol J. Barer, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 22, 1980, Ser. No. 171,068

Int. Cl.³ A01N *31/02*

U.S. Cl. 71—78 **7 Claims**

1. A method for the inhibition of suckering in growing plants susceptible thereto comprising the application of an effective amount of a composition comprising an active agent consisting essentially of 2-butyl-2-ethyl-1,3-propanediol.

4,272,278

1-METHYL-2-ARYL-2,3-DIHYDRO-1H-2,1-BENZAZAPHOSPHOLE-1-OXIDES, HERBICIDAL COMPOSITIONS AND THE USE THEREOF

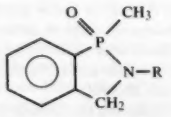
Mark T. Beeny, Maryland Heights, and James A. Miles, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 55,432, Jul. 6, 1979, abandoned. This application May 12, 1980, Ser. No. 148,841

Int. Cl.³ A01N *57/36;* **C07F** *9/65*

U.S. Cl. 71—86 **15 Claims**

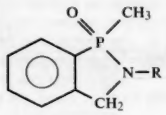
1. A compound of the formula



wherein R is selected from the group consisting of phenyl,

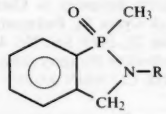
phenoxyphenyl and substituted phenyl containing from one to three substituents individually selected from the class consisting of lower alkyl, lower alkoxy, halogen, and lower haloalkyl.

6. A herbicidal composition comprising an inert adjuvant and a herbicidally effective amount of a compound of the formula



wherein R is selected from group consisting of phenyl, phenoxyphenyl and substituted phenyl containing from one to three substituents individually selected from the class consisting of lower alkyl, lower alkoxy, halogen, and lower haloalkyl.

11. A method of controlling undesired plants which comprises contacting said plants or the plant growth medium with a herbicidal amount of a compound of the formula



wherein R is selected from the group consisting of phenyl, phenoxyphenyl and substituted phenyl containing from one to three substituents individually selected from the class consisting of lower alkyl, lower alkoxy, halogen, and lower haloalkyl.

4,272,279

SEMICARBAZIDYL PHTHALIDES AND USE AS PLANT GROWTH REGULATORS

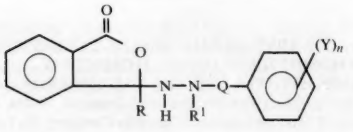
Joel L. Kirkpatrick, Washington Crossing, Pa., and Natu R. Patel, Overland Park, Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 19, 1980, Ser. No. 161,189

Int. Cl.[3] **A01N** *43/08;* **C07D** *307/88*

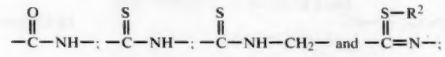
U.S. Cl. 71—88 **54 Claims**

1. A compound of the formula:



(I)

in which Q represents one of the following structures:



R is methyl or ethyl, R^1 is H or lower alkyl, R^2 is lower alkyl and Y represents substituents, alike or unlike, selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, bromo, chloro, fluoro, cyano and trifluoromethyl and n=0 to 3, or a hydrohalide salt thereof.

2. The method of regulating the growth of plants comprising applying to the plants, the seed or the soil an effective amount of a compound as specified in claim **1**.

4,272,280

ISOBENZOFURANDIONE THIOSEMICARBAZONES AND USE AS PLANT GROWTH REGULATORS

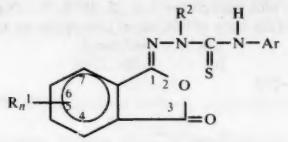
Loren W. Hedrich, Orange, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 7, 1980, Ser. No. 166,000

Int. Cl.[3] **A01N** *43/08, 43/30;* **C07D** *307/90, 317/66*

U.S. Cl. 71—88 **39 Claims**

1. A compound which has the structural formula:



in which R^1 is; C_1 to C_4 alkyl, nitro or halo and n is zero or an integer from 1 to 4, R^2 is; C_1 to C_4 alkyl, or phenyl and Ar is; phenyl or benzyl which may also have thereon a methylenedioxy group or from one to three of the substituents: cyano, phenoxy, nitro, fluoro, bromo, chloro, trifluoromethyl, C_1 to C_4 alkyl, alkenyl, alkoxy, alkylthio or alkylsubstituted amino.

34. The method of regulating the growth of plants comprising applying to the plants, the seed or the soil an effective amount of a compound as specified in claim **1**.

4,272,281

COMPOSITION FOR AND METHOD OF SELECTIVELY CONTROLLING WEEDS IN CEREALS

Marco Quadranti, Brugg; Willy Maurer, Basel, and Kurt Maag, Muttenz, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 11, 1979, Ser. No. 56,669

Claims priority, application Switzerland, Jul. 20, 1978, 7837/78

Int. Cl.[3] **A01N** *43/02, 43/40*

U.S. Cl. 71—90 **4 Claims**

1. A herbicidal composition for the selective control of weeds in wheat crops which comprises a herbicidally effective amount of two active components, one component being N-(3-trifluoromethyl-1,2,4-thiadiazolyl-5)-N′-methyl-N′-methoxyurea and the other component being methyl α-[4-(3′,5′-dichloropyridyl-2′-oxy)-phenoxy]-propionate, together with inert carriers and or other inert adjuvants, in which the ratio of the urea component to the methyl propionate component is from 1:1 to 5:1.

4,272,282

HERBICIDAL AGENTS BASED ON ACETANILIDES AND DICHLOROACETAMIDES

Hanspeter Hansen, Ludwigshafen; Karl Eicken, Wachenheim; Peter Plath, Ludwigshafen; Wolfgang Rohr, Mannheim, and Bruno Wuerzer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

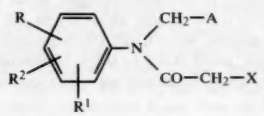
Filed Jul. 17, 1979, Ser. No. 58,258

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832950

Int. Cl.[3] **A01N** *43/56, 37/18*

U.S. Cl. 71—92 **5 Claims**

1. A herbicidal agent for the selective control of unwanted plant growth in corn, said agent containing and effective amount of a substituted acetanilide of the formula



I.

where R denotes hydrogen or linear or branched alkyl of up to 5 carbon atoms, R^1 denotes hydrogen or linear or branched alkyl of up to 5 carbon atoms, R^2 denotes hydrogen or linear or branched alkyl of up to 5 carbon atoms, X denotes chlorine or bromine, and A denotes pyrazole which is attached via a ring nitrogen atom and may be mono- or polysubstituted by halogen, alkyl or alkoxy, each of up to 4 carbon atoms, or A denotes a salt of a pyrazole, as a herbicidal active ingredient, and N-isopropyl-N-propargyl-dichloroacetamide as an antagonistic agent, the ratio of the acetanilide of formula I to the antagonistic agent being from 1:2 to 1:0.125 parts by weight.

4,272,283

HERBICIDAL COMPOSITION AND METHOD FOR CONTROLLING WEEDS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya, and Kaoru Ikeda, Ami, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Jun. 18, 1979, Ser. No. 49,641

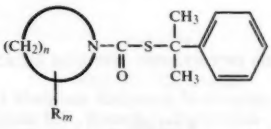
Claims priority, application Japan, Jun. 20, 1978, 53-73797

Int. Cl.³ A01N *43/40, 43/36, 37/18, 43/00*

U.S. Cl. 71—94 **7 Claims**

1. A method for controlling weeds, which comprises applying to the locus where the weeds are growing or will grow, 1 to 2,000 g 10 ares of a mixture of

(a) an S-α,α-dimethylbenzyl-N-alkylenimine carbothiolate of the formula



(1)

wherein R represents a lower alkyl group, m is 0, 1 or 2, n is 4, 5 or 6, and the chain of n —CH_2— linkages may contain one oxygen atom, and

(b) 3,4-dichloropropionanilide in a weight ratio of 10 to 400 parts (6) to 100 parts (a).

4,272,284

ARYLTHIOUREIDOISOINDOLINES AND USE AS PLANT GROWTH REGULATORS

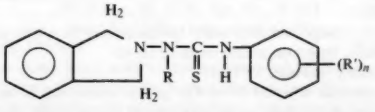
Charles G. Gibbs, Shawnee Mission, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1980, Ser. No. 124,992

Int. Cl.³ A01N *43/38;* **C07D** *209/44*

U.S. Cl. 71—96 **4 Claims**

1. The method of regulating the growth of plants which comprises applying to the plants pre- or post- emergently an effective amount of a composition comprising from 0.1 percent to 95 weight percent of a compound having the structural formula



in which R is H or CH_3, R′ is halogen, trifluoromethyl, cyano or C_1 to C_3 alkyl or C_1 to C_3 alkoxy and n is zero or an integer from 1 to 2, in combination with from 0.1 to 75 weight percent of a carrier or surfactant.

4,272,285

PROCESS FOR PRODUCING MAGNETIC METAL POWDERS

Rioichi Horimoto, Komoro, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 168,889

Claims priority, application Japan, Jul. 12, 1979, 54-87481; Jul. 12, 1979, 54-87482

Int. Cl.³ C22B *5/12*

U.S. Cl. 75—0.5 BA **5 Claims**

1. A process for producing a magnetic metal powder which comprises reducing a magnetic metal compound in a state mixed with a clay by dry reduction.

4,272,286

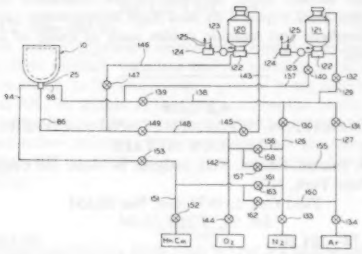
METALLURGICAL VESSEL

Eberhard G. Schempp, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Division of Ser. No. 925,545, Jul. 17, 1978, Pat. No. 4,218,049. This application Nov. 13, 1979, Ser. No. 93,808

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—51 **4 Claims**



1. A method of treating a molten ferrous metal comprising the steps of containing said metal in a metallurgical vessel, delivering oxygen to said metal in a first flow passage, entraining a highly oxidizable desulfurizing agent in a nonoxidizing gas and delivering the same to said molten metal through a separate second passage concentric with said first passage and delivering hydrocarbon shielding fluid to said vessel through a third flow passage disposed in surrounding relation to said first and second flow passages.

4,272,287

PROCESS FOR REFINING MOLTEN STEEL CONTAINING CHROMIUM

Tadamasa Yajima, Nagoya; Shuzo Kitagawa, Aichi, and Hiromi Hata, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Aichi, Japan

Filed May 8, 1980, Ser. No. 147,558

Claims priority, application Japan, May 29, 1979, 54-66487

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—60 **7 Claims**

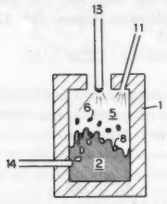
1. Decarburizing refining process for chromium-containing steel comprising steps of:

performing decarburizing reaction and creating turbulence by means of blowing oxygen and inert gas into molten steel in a furnace below the upper surface level thereof;

performing combustion of carbon monoxide (CO) gas produced from the upper surface of the molten steel by means of blowing above said upper surface level oxygen-contain-

ing gas including therein oxygen at least 0.2 times as much as the amount of the oxygen blown below said upper surface level, to convert said carbon monoxide (CO) gas, produced as a product of decarburization reaction caused by the oxygen blown below said upper surface level, into carbon dioxide (CO_2) gas by the oxygen-containing gas blown above said upper surface level;

diffusing exothermic energy, produced by the conversion of carbon monoxide to carbon dioxide, into the molten steel



through the violent turbulent stirring thereof caused by the blowing of the oxygen and the inert gas into the molten steel below said upper surface level for raising thereby the temperature of the molten steel; and

promoting the decarburization reaction taking place, in a high temperature gaseous atmosphere formed above said upper surface level, between carbon contained in the molten steel exposed to said high temperature gaseous atmosphere and metallic oxides such as oxide of chromium.

4,272,288

CONCENTRATION, SEPARATION AND RECOVERY OF PRECIOUS METALS

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,634
Int. Cl.[3] C22B *11/04*
U.S. Cl. 75—101 BE **37 Claims**

1. A process for the separation and recovery of precious metals selected from platinum and palladium, which process comprises the steps of:

(a) forming a solution of an ammine complex of a precious metal selected from platinum and palladium;

(b) contacting said solution with one or more members of a novel class of zeolites characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of greater than about 2 to about 12, to selectively sorb said ammine complex;

(c) desorbing said precious metal from said zeolite by ion-exchange with a cation; and

(d) recovering said precious metal.

4,272,289

OXIDATION RESISTANT IRON BASE ALLOY ARTICLES FOR WELDING

Robert B. H. Herchenroeder, and H. Joseph Klein, both of Kokomo, Ind., assignors to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 672,421, Mar. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 472,341, May 22, 1974, abandoned. This application Nov. 29, 1979, Ser. No. 98,871
Int. Cl.[3] C22B *0/00*
U.S. Cl. 75—122 **25 Claims**

1. An improved oxidation resistant iron base alloy article for subsequent welding to another article to form a composite product characterized by reduced heat affected zone cracking high oxidation resistance and improved thermal fatigue resistance as compared with columbium and vanadium bearing iron base alloys consisting essentially of about 0.05 to 0.7% carbon, less than 0.3% columbium, about 15 to 30% cobalt, about 18 to 25% chromium, about 0 to 2% manganese, about 1 to 6% molybdenum, about 0.10 to 0.30% nitrogen, about 15 to 30% nickel, about 0.2 to 0.8% silicon, about 0.1 to 2% tantalum, about 1 to 10% tungsten, about 0 to 0.1% zirconium, about 0.1 to 0.5% aluminum, about 0.001 to 0.1% lanthanum and the balance >23% iron with incidental impurities aggregating less than about 0.6%.

4,272,290

NOVEL POROUS BODY AND PROCESS FOR ITS PREPARATION

Jacques Lesgourgues, Corbeil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Jul. 18, 1979, Ser. No. 58,487
Claims priority, application France, Jul. 25, 1978, 78 21894
Int. Cl.[3] B22F *1/00, 3/00*
U.S. Cl. 75—212 **3 Claims**

1. A porous material comprising 85% to 99.5% by weight of a base materials, in the form of elementary particles such as powders, fibers or chips, selected from the group consisting of nickel, cobalt, iron and various alloys of said metals, and approximately 15 to 0.5% by weight of a fusible auxiliary metal chosen from the group consisting of tin, indium, gallium, germanium, antimony, together with the mixtures and alloys of said metals, said elementary particles being joined to each other by diffusion brazing obtained by means of a dispersion of the fusible material within the particles and by heating the assembly, under a controlled atmosphere, at a temperature higher than 900° C., but in all cases lower than the solidus temperature of the base metal, for a period of time sufficient to cause the melting and diffusion of said fusible metal in the base material.

4,272,291

HEAT-REFLECTIVE ENAMEL

Maria A. Shtern, prospekt Nauki, 11, kv. 87; Nelli I. Levit, prospekt Metallistov, 76, kv. 305; Alla V. Bondarenko, Grazhdansky prospekt, 83, korpus 1, kv. 123, and Alexandra K. Kaschentseva, prospekt Kosmonavtov, 21, korpus 1, kv. 23, all of, Leningrad, U.S.S.R.

Filed Jan. 2, 1980, Ser. No. 109,105
Int. Cl.[3] C09D *5/08*
U.S. Cl. 106—14.05 **1 Claim**

1. In a heat-reflective enamel comprising, by weight, 100 parts of a weather resistant vehicle, 30 to 80 parts of a pigment, 1 to 60 parts of and extender, 90 to 840 parts of the a solvent; improvement comprising 15 to 60 parts of the ground product obtained by the thermal interaction between a compound selected from the group consisting of titanium dioxide and metatitanic acid, a nickel compound, antimony trioxide, and a compound selected from the group consisting of ammonium dichromate and an alkali metal dichromate, taken in the following amounts, in parts by weight:

compounds selected from the group consisting of titanium dioxide and metatitanic acid, based on titanium dioxide: 100

nickel compound thermally decomposed to yield nickel oxide, based on nickel oxide: 3 to 32

antimony trioxide: 15 to 35

compounds selected from the group consisting of ammonium dichromate or an alkali metal dichromate, based on chromium oxide: 2 to 5.

4,272,292

HEAT TRANSFER PRINTING

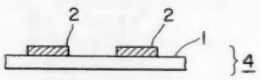
Shogo Mizuno, Toride; Kyoichi Shimomura, Tokyo, and Michiaki Kobayashi, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,901

Claims priority, application Japan, Nov. 28, 1977, 52-142423; Nov. 28, 1977, 52-142424

Int. Cl.[3] C09D *11/02, 11/10, 11/14;* D06P *5/15*

U.S. Cl. 106—22 9 Claims



1. An ink composition for heat transfer printing having enhanced stability on storage comprising:

from about 0.1 to about 10 weight percent of a coloring agent comprising at least one of a carbinol base of a basic dye or a carbinol base derivative, wherein said derivative is the product of the reaction between said basic dye and an alcoholate, and said coloring agent is sublimable at a temperature of from about 80° to about 250° C.;

from about 0.1 to about 10 weight percent of a strong base, wherein the mole ratio of said strong base to said coloring agent is from about 1:1 to about 40:1;

from about 5 to about 20 weight percent of a binder; and a solvent;

wherein all weight percents are based on the total weight of the composition.

4,272,293

PROCEDURE FOR THE TREATMENT OF COMBINED WET FILTER CAKES

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Filed Jul. 17, 1978, Ser. No. 925,366

Claims priority, application Netherlands, Jul. 22, 1977, 7708196; Dec. 27, 1977, 7714456

Int. Cl.[3] C04B *23/04*

U.S. Cl. 106—73.6 22 Claims

1. In a process for the treatment of metal-containing filter cakes formed during the purification of wet phosphoric acid obtained by wet methods, the improvement comprising heating the filter cake to above 500° C. in the presence of an inorganic melt whereby said metals are absorbed in the melt.

4,272,294

ALKALI RESISTANT GLASS ARTICLE AND METHOD OF PREPARATION

Karlis L. Jaunarajs, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 20, 1979, Ser. No. 77,451

Int. Cl.[3] C04B *31/06;* D02G *3/00*

U.S. Cl. 106—99 15 Claims

1. A glass fiber article having enhanced alkali resistance which comprises glass fiber having thereon a coating comprising zinc stearate and a film forming polymer, said coating being present as 1 to 60% by weight of solids based on the weight of glass fiber.

4,272,295

STARCH-BASED ADHESIVES

Kaljo Linke, Sydney, Australia, assignor to N. B. Love Industries Pty. Ltd., New South Wales, Australia

Filed Jun. 6, 1979, Ser. No. 46,019

Claims priority, application Australia, Jun. 20, 1978, PD4794

Int. Cl.[3] C08L *3/00, 89/00*

U.S. Cl. 106—157 10 Claims

1. The method of manufacturing a starch based adhesive comprising the steps of:

combining as a mixture at least one lyophilic colloid, granules of at least one raw starch, a water soluble alkaline substance, and water;

partially gelatinising the raw starch granules by alkalization until the starch granules are partially swollen, have lost birefringence, and have increased viscosity, but have not attained maximum swelling and have not burst; and

adding a reaction stopper to the mixture prior to the raw starch granules reaching maximum swelling and bursting.

4,272,296

NEW INORGANIC PIGMENTS AND PROCESS FOR THEIR PREPARATION

Luigi Balducci, Alessandria, and Massimo Rustioni, Pozzolo Formigaro, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 4, 1980, Ser. No. 118,117

Claims priority, application Italy, Feb. 9, 1979, 20036 A/79

Int. Cl.[3] C09C *1/00*

U.S. Cl. 106—288 B 9 Claims

1. A yellow pigment composition consisting essentially of monoclinic bismuth vanadate and orthorhombic barium sulfate, in which the barium sulfate is present in amounts between 10 and 90% by weight of the total composition, said composition being obtained by co-precipitating bismuth vanadate and barium sulfate, calcining in the presence of air at a temperature between 400° and 700° C., cooling down slowly and finally grinding.

4,272,297

COMPOSITIONS FOR USE WITH PAPERMAKING FILLERS

Kenneth Brooks, Longfield; Leslie E. Shiel, Gravesend, and David E. Smith, Longfield, all of England, assignors to Blue Circle Industries Limited, London, England

Filed Sep. 19, 1979, Ser. No. 77,095

Int. Cl.[3] C09C *1/02*

U.S. Cl. 106—306 16 Claims

1. A composition for flocculating filler in aqueous suspension intended for use in a papermaking furnish, comprising:

(a) at least one starch, (b) an organic polyelectrolyte capable of flocculating mineral filler particles in aqueous suspension, and (c) at least one agent capable of regulating the mobility of a dispersion.

4,272,298

PROCESS FOR CONDITIONING A PIGMENT IN LIQUID AMMONIA

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 873,584, Jan. 30, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,634

Claims priority, application Switzerland, Feb. 3, 1977, 1317/77

Int. Cl.[3] C09B *67/10, 67/20, 67/48, 67/54*

U.S. Cl. 106—309 6 Claims

1. A process for conditioning an organic pigment selected from the group consisting of isoindolinone, azo, metal complex, quinacridone and quinophthalone pigments with liquid ammonia which comprises: (a) treating the pigment with liquid ammonia in the absence of water or organic solvent; and (b) isolating the pigment by filtration and subsequent removal of

the ammonia by evaporation or by direct evaporation of the ammonia.

4. A process for conditioning an organic pigment selected from the group consisting of isoindolinone, azo, metal complex, quinacridone and quinophthalone pigments with liquid ammonia which comprises: (a) treating the pigment with liquid ammonia in the absence of water or organic solvent; (b) partially evaporating the ammonia to form a pigment suspension; (c) diluting the suspension with an organic solvent or water; and (d) isolating the pigment by filtration and subsequent removal of the ammonia, organic solvent or water.

4,272,299

BURNT SUGAR CARAMEL FLAVORING AND PROCESS OF MAKING

Hazel S. Bush, Rte. 1, Box 78, Newton, Ga. 31770

Filed Mar. 24, 1980, Ser. No. 133,257
Int. Cl.[3] **A23L** *1/09, 1/22*
U.S. Cl. 127—29 **6 Claims**

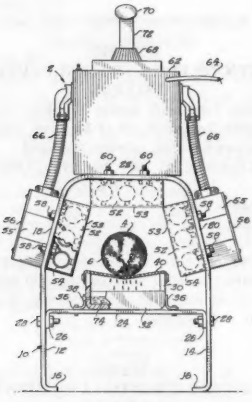
1. A burnt sugar instant caramel flavoring in syrup form storable at room temperature consisting of a mixture of approximately five parts by volume of a sugar base holding syrup and three parts, by volume of a burnt sugar caramel flavored syrup.

4,272,300

METHOD FOR CLEANING GREASE-FILLED CABLE STUB

Frederick W. Burtelson, Harvard, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Division of Ser. No. 933,056, Aug. 11, 1978. This application Feb. 6, 1980, Ser. No. 119,095
Int. Cl.[3] **B08B** *7/00*
U.S. Cl. 134—5 **4 Claims**



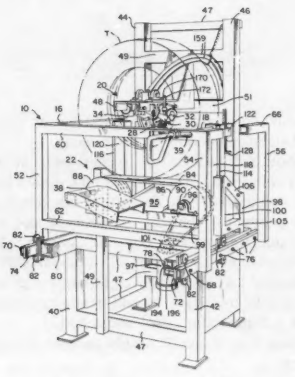
1. A method of cleaning grease from around the insulated wires of an electrical cable stub wherein the cable has a sheath that has been removed at the stub to expose the grease packed insulated wires, said method comprising positioning said stub over an open top trough so that the grease is exposed to the inside of the trough, heating the stub to a temperature sufficient to melt the grease and allow it to run off of the stub into the trough to be collected therein, maintaining the temperature to which the stub is exposed at a level that avoids damage to the insulation of the wires, and during said heating supporting said stub on a structure of sufficiently low heat absorbtivity so as to prevent the formation of hot spots on the cable which might damage the insulation of the wires.

4,272,301

TIRE CLEANING SYSTEM WITH TIRE SPREADER

Lyle D. Galbraith; Hudson Stewart, both of Kirkland, and Jon M. Congdon, Redmond, all of Wash., assignors to Rockcor, Inc., Redmond, Wash.

Continuation of Ser. No. 903,964, May 8, 1978, abandoned, which is a continuation of Ser. No. 751,605, Dec. 17, 1976, abandoned. This application Apr. 15, 1980, Ser. No. 140,612
Int. Cl.[3] **B08B** *1/04, 9/00;* **B60C** *25/14*
U.S. Cl. 134—8 **14 Claims**



1. A method of cleaning the interior of a tire, comprising moving the tire to a position in which a cleaning means is positioned within the inner circumference of the tire, engaging the tire at its outer tread portion and causing relative motion of the tire and cleaning means in a direction substantially normal to the tire axis until the cleaning means is positioned in the tire interior, and rotating the tire adjacent the cleaning means during cleaning thereof.

10. A tire cleaner comprising:

cleaning means for cleaning an interior tire surface during rotation of the tire;

tire rotation means operatively associated with the cleaning means for causing rotation of the tire during cleaning;

tire transport means operatively associated with the cleaning means for moving the tire into position for cleaning; and

tire spreading means operatively associated with said cleaning means to spread the tire beads for admitting said cleaning means into the tire interior, said spreading means including a pair of members movable between first and second positions relative to each other, said members in said first position adapted to engage opposed tire beads as said transport means moves said tire into cleaning position, and means for moving at least one of the members away from the other member to said second position in response to contact of said one member with said tire beads.

4,272,302

METHOD OF MAKING V-MOS FIELD EFFECT TRANSISTORS UTILIZING A TWO-STEP ANISOTROPIC ETCHING AND ION IMPLANTATION

Murzban D. Jhabvala, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

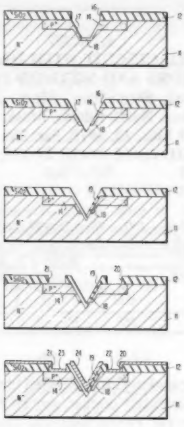
Filed Sep. 5, 1979, Ser. No. 72,727
Int. Cl.[3] **H01L** *21/265, 21/306*
U.S. Cl. 148—1.5 **4 Claims**

1. A method of making a V-MOS field effect transistor comprising the steps of:

forming a masking layer over a surface of a crystalline substrate;

opening an aperture in said masking layer to expose said surface of said substrate;

applying an anisotropic etchant to said exposed surface to etch a groove in said crystalline substrate, said groove having a decreasing width with increasing depth;



inhibiting the effect of said anisotropic etchant before the etch goes to completion so that a V-shaped groove is only partially formed;

accelerating ions through said aperture for implantation in said crystalline substrate in the lower portion of the partially formed V-shaped groove; and

thereafter reapplying an anisotropic etchant to said partially formed V-shaped groove and allowing the etch to go to completion.

4,272,303

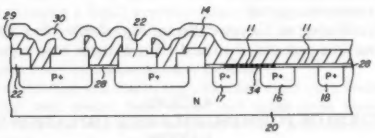
METHOD OF MAKING POST-METAL ION BEAM PROGRAMMABLE MOS READ ONLY MEMORY

Pallab K. Chatterjee, Dallas, and Al F. Tasch, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 912,635, Jun. 5, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 68,841

Int. Cl.³ H01L *21/265;* **B01J** *17/00*

U.S. Cl. 148—1.5 **17 Claims**



1. A method of making a read-only-memory comprising the steps of:

forming a plurality of insulated gate field effect transistors in the face of a semiconductor body, each of the transistors having spaced source and drain regions, a channel between the source and drain regions, a gate oxide layer overlying the channel between the source and drain regions, and a gate electrode overlying the gate oxide, the transistors being in a regular pattern to provide an array of memory cells;

subsequent to the completion of fabrication processing involving the formation of the array of memory cells, ion implanting particular memory cells by directing ions of sufficient energy to directly penetrate through the material of the gate electrode and into the gate oxide of selected memory cells; and

programming the array of memory cells by altering the electrical characteristics of said particular memory cells in response to the selective ion implantation of said particular memory cells.

4,272,304

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

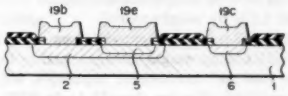
Shigeru Komatsu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 22, 1979, Ser. No. 87,435

Claims priority, application Japan, Oct. 26, 1978, 53-131876

Int. Cl.³ H01L *21/26*

U.S. Cl. 148—1.5 **9 Claims**



1. A method of manufacturing a semiconductor device which comprises the steps of:

(1) forming a first insulation layer all over the main surface of a semiconductor substrate in which a base region is diffused, and covering the first insulation layer with a second insulation layer capable of selectively etching against the first insulation layer;

(2) selectively etching off the second insulation layer to form a preliminary port for the diffusion of an emitter region, a preliminary port for mounting a base electrode and a preliminary port for mounting a collector electrode;

(3) depositing a covering layer capable of selectively etching against the second insulation layer all over the second insulation layer;

(4) selectively etching off all portions of the covering layer except the portion which closes the preliminary port for mounting the base electrode to form a retained covering layer;

(5) selectively etching off those portions of the first insulation layer which are exposed at the bottoms of said emitter diffusion and collector electrode preliminary ports, thereby providing an emitter diffusion port and collector electrode deposition port;

(6) forming an emitter region and a high concentration region for the leadout of a collector electrode through the emitter diffusion port and collector electrode deposition port respectively; and

(7) etching off the retained covering layer which is left on the base electrode deposition preliminary port and that portion of the first insulation layer which is exposed at the bottom of said base electrode deposition preliminary port, thereby providing a base electrode deposition port.

4,272,305

FERRITIC-AUSTENTITIC CHROMIUM-NICKEL STEEL AND METHOD OF MAKING A STEEL BODY

Hermann Weingerl, and Manfred Koren, both of Kapfenberg, Austria, assignors to Vereinigte Edelstahl-Werke Aktiengesellschaft (VEW), Vienna, Austria

Filed Apr. 10, 1979, Ser. No. 28,815

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815439

Int. Cl.³ C22C *38/58;* **C21D** *1/02*

U.S. Cl. 148—12 E **7 Claims**

1. A method of making corrosion resistant objects which comprises the step of forging a chromium-nickel ferritic-auste-

nitic steel containing 30% to 70% austenite and consisting of the following composition:

up to 0.1% by weight carbon,
up to 1.0% by weight silicon,
4.5% to 6.0% by weight manganese,
22.0% to 28.0% by weight chromium,
3.5% to 5.5% by weight nickel,
1.0% to 3.0% by weight molybdenum,
0.35% to 0.6% by weight nitrogen,
balance iron and unavoidable impurities, to a body having a notch impact strength and tenacity in an ISO-V test of at least 35 Joule with a two degree forging and a minimum yield point of 600 N/mm^2.

7. A forged body consisting of ferritic-austenitic chromium-nickel steel having the following composition:

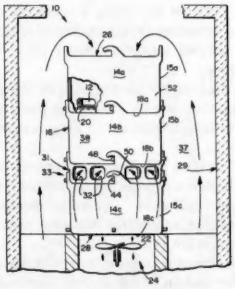
up to 0.1% by weight carbon;
up to 1.0% by weight silicon;
4.5% to 6.0% by weight manganese;
22.0% to 28% by weight chromium;
3.5% to 5.5% by weight nickel;
1.0% to 3.0% by weight molybdenum;
0.35% to 0.6% by weight nitrogen; and
balance iron and unavoidable impurities, with a notch impact strength of more than 35 Joule (ISO-V) with two-degree forging and a minimum yield point of 600 N/mm^2, the steel containing 30% to 70% austenite.

4,272,306

CARBURIZING TUB APPARATUS AND METHOD

George E. Reisinger, Jr., York, Pa., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 27, 1979, Ser. No. 88,722
Int. Cl.[3] **C21D** *1/48*
U.S. Cl. 148—16.5 **16 Claims**



1. An apparatus (**10**) for controllably contacting a plurality of parts (**12**) with a gas, comprising:

a pair of tubular tubs (**14***b*,**14***c*) open at both ends, having flow impervious sidewalls (**15***b*,**15***c*) and an open framework (**20**) for holding the parts (**12**) within each respective tube (**14***b*, **14***c*); and

a tubular spacer member (**31**,**31′** or **31″**) having an aperture (**32**,**32′** or **32″**) extending laterally therethrough, the spacer member (**31**,**31′** or **31″**) being located longitudinally between the tubs (**14***b*,**14***c*) in abutting relation thereto to define, with said tubs (**14***b*,**14***c*), a stacked column (**16**) and a first flow path for the gas longitudinally through the column (**16**), and the aperture (**32**,**32′** or **32″**) defining a second flow path for ingress of the gas from exteriorly of said column (**16**) to the first flow path.

14. A method of treating a plurality of parts (**12**) with a gas, comprising:

placing the parts (**12**) on an open frame work (**20**) within a pair of tubular tubs (**14***b*,**14***c*) open at both ends and having generally flow impervious sidewalls (**15**);

forming a column (**16**) by placing a tubular spacer member (**31**) in abutting relation between the tubs (**14***b* and **14***c*);

directing the gas in a first flow path longitudinally through the column (**16**); and

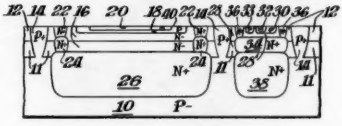
controllably directing the gas inwardly into the column (**16**) through a plurality of lateral apertures (**32**,**32′** or **32″**) in the tubular spacer member (**31**).

4,272,307

INTEGRATED CIRCUIT WITH I^2L AND POWER TRANSISTORS AND METHOD FOR MAKING

James F. Mayrand, Shrewsbury, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 12, 1979, Ser. No. 19,971
Int. Cl.[3] **H01L** *21/74, 21/22, 29/167;* **H03K** *19/091*
U.S. Cl. 148—187 **7 Claims**



1. A method for making an integrated circuit having a power transistor in one epitaxial pocket and an I^2L transistor in another epitaxial pocket, chronologically comprising:

(a) forming first N-type epitaxial layer on a face of a P-type silicon substrate;

(b) predoping a portion of the exposed face of said first epitaxial layer with antimony atoms;

(c) forming over said first layer a second N-type epitaxial layer;

(d) at least partially electrically isolating said one and another pockets in said layers so that said predoped face portion is in said another pocket;

(e) forming an N-type emitter region in said one pocket extending into said second layer from the outer surface thereof;

(f) heating said substrate, to further expand said emitter, to complete said electrically isolating, and to drive said antimony atoms to form an N-type buried layer at the interface between said layers in said another pocket creating an N^+N holes-barrier junction with the unaltered portion of said epitaxial layer;

(g) diffusing two P-type base regions extending from the outer surface of and part way through said second epitaxial layer for said power transistor in said one pocket and for said inverted I^2L transistor in said another pocket, respectively; and

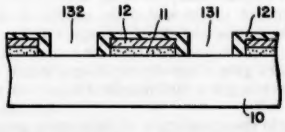
(h) diffusing an N-type collector region extending from said surface part way into said I^2L transistor base region.

4,272,308

METHOD OF FORMING RECESSED ISOLATION OXIDE LAYERS

Ramesh C. Varshney, 2622 Ohlone Dr., San Jose, Calif. 95132

Filed Oct. 10, 1979, Ser. No. 83,346
Int. Cl.[3] **H01L** *21/316*
U.S. Cl. 148—187 **6 Claims**



1. A method for growing a recessed oxide region in a portion

of a semiconductor substrate located beneath an opening within a protective layer comprising the steps of:

forming an oxide-growth-inhibiting coating over said layer, on the portion of said layer defining said opening, and over the portion of said substrate beneath said opening;

simultaneously removing both said coating over the portion of said substrate beneath said opening to expose said substrate and said coating over said layer while leaving said coating on the portion of said layer defining said opening; and

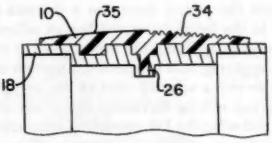
subjecting the said portion of said semiconductor substrate exposed through said opening to an oxidizing process selected to grow said recessed oxide region in said substrate.

4,272,309

PROCESS FOR MOLDING REINFORCED ARTICLES

Roger E. Payne; Robert K. Rossi, both of Akron, Ohio, and James B. Knizely, Middlebury, Conn., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 1, 1980, Ser. No. 145,477
Int. Cl.[3] B29H *17/00*
U.S. Cl. 156—117 **29 Claims**



17. A method of preparing a reinforced tire of liquid reaction material in a tire mold, said mold having a pair of side plates, and a collapsible radially inner tire mold core member which comprises the steps of:

(a) preparing an outer ring of a tread belt member in a tread mold with a removable, generally cylindrical tread mold core member and a radially outer shell member positioned radially outward of the surface of said core member to define a cavity between said shell member and said core member including the steps of:

(1) mounting a spacer band with a radially outer groove thereon around a radially outer surface of said tread mold core member,

(2) wrapping a reinforcing cord around said spacer band and in said groove,

(3) positioning said outer shell member radially outward of said tread mold core member to define an outer cavity between said band and said outer shell member,

(4) charging a liquid reaction mixture into said outer cavity and partially curing said mixture to form an outer polymeric ring of said tread belt member adhered to said reinforcing cord,

(5) collapsing and removing said tread mold core member and said spacer band from said outer shell member containing said outer polymeric ring and reinforcing cord,

(6) positioning a collapsible tread mold core member adjacent said outer shell member to define an inner cavity between said outer polymeric ring and said tread mold core member,

(7) charging a liquid reaction mixture into said inner cavity to form an inner polymeric ring of said tread belt,

(8) partially curing said inner ring and said outer ring at a predetermined temperature to adhere said inner ring to said outer ring,

(9) removing said tread belt from said collapsible tread mold core member and said outer shell member,

(10) mounting said tread belt between said pair of side plates in an outer tread ring of said tire mold;

(b) closing said tire mold with said collapsible tire core member being spaced from said side plates and said tread belt to define a cavity of generally tire shape;

(c) charging a liquid reaction mixture into said cavity to form a tire body and at least partially curing said tire body and further curing said tread belt to adhere said body to said tread belt; and

(d) opening said tire mold and collapsing said tire mold core member to remove the tire from said tire mold.

4,272,310

METHOD OF MAKING A BONDED STRUCTURE OF MAGNET WIRE

Charles D. Dudgeon, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,306
Int. Cl.[3] B65H *71/00*
U.S. Cl. 156—172 **12 Claims**

1. In a method of making a bonded structure of magnet wire, the steps comprising:

applying a dual-purpose coating of reactive and lubricating spooling oil mixture to a length of unlubricated magnet wire;

forming the magnet wire into a coil, with the continguous turns of the magnet wire being in abutting relationship; and

heating said coil of magnet wire whereby said coating is converted to a hard adhesive for bonding together the contiguous turns of said coil.

10. In a method of making a bonded structure of magnet wire, the steps comprising:

applying a dual-purpose coating of reactive and lubricating spooling oil mixture onto a length of unlubricated magnet wire;

forming the magnet wire into a coil, with the contiguous turns of the magnet wire being in abutting relationship; and

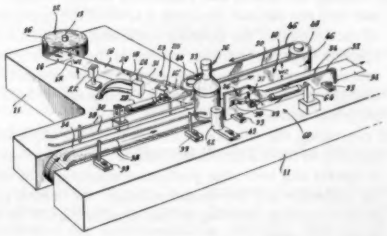
heating said coil of magnet wire whereby said coating is converted to a hard adhesive for bonding together the contiguous turns of said coil, said reactive spooling oil mixture including the epoxy resin compound 3,4-epoxycyclohexylmethyl(3,4-epoxy)cyclohexane carboxylate, or the melamine resin compound hexamethoxymethylmelamine.

4,272,311

METHOD AND APPARATUS FOR AUTOMATICALLY LABELLING CONTAINERS

Joseph J. D'Angelo, 378 Annette Ct., Wycoff, N.J. 07481, and Joseph J. D'Angelo, Jr., 53 Iroquois Ave., Oakland, N.J. 07536

Filed May 17, 1979, Ser. No. 39,755
Int. Cl.[3] B26D *5/02*; B65C *3/00*
U.S. Cl. 156—215 **13 Claims**



1. The method of automatically labelling containers comprising the steps of:

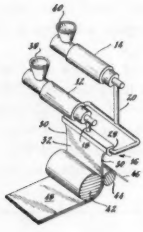
(a) transporting a series of individual containers to a label-engaging station,
(b) feeding a continuous web of preprinted labels to the label-engaging station,
(c) sensing a predetermined portion of each label as the web is being fed to the label-engaging station,
(d) selectively applying an adhesive to the web of preprinted labels,
(e) attaching the front edge of the leading label in the web to a container by pressing the front edge of the label having adhesive thereon into contact with the container at said label-engaging station,
(f) wrapping the attached label around the container by rolling the container,
(g) in response to said sensing temporarily clamping the web, and
(h) separating the label from the web as the label is being wrapped around the container by rolling the container.

4,272,312

PROCESS FOR EXTRUDING FILMS OF THERMOPLASTIC POLYESTER FILM-FORMING MATERIALS

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 1, 1979, Ser. No. 90,403
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—244.11 **13 Claims**



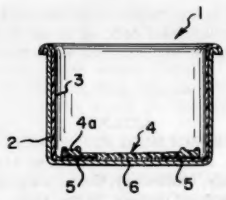
1. A process for forming a film of a thermoplastic film-forming, polyester comprising the steps of:
(a) heating and plasticizing the polyester;
(b) feeding the heated and plasticized polyester to a die having an elongated die opening therein;
(c) heating and plasticizing a second organic polymer not normally readily processable with the polyester;
(d) feeding the heated and plasticized second organic polymer into the die and directing it toward the opposite ends of the elongated die opening sufficiently upstream of the opening to permit intimate mixing of the polyester and the second polymer in the areas near both opposite ends of the elongated dies, thereby forming a composite stream of the polyester and second polymer;
(e) expressing the composite stream from the elongated die opening to form a film comprising a central portion of the polyester and two edge portions comprising a mixture of the polyester and the second polymer, the central portion of the polyester covering at least a major part of the width of the film; and
(f) drawing the film from the die opening at a rate greater than the rate of extrusion to thereby reduce the thickness of the film.

4,272,313

METHOD OF MANUFACTURING A METAL CAP WITH A LINING AFFIXED THERETO AT SELECTED AREAS

Fumio Mori, and Kazuhisa Ishibashi, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,119
Claims priority, application Japan, May 26, 1978, 53-62305
Int. Cl.³ B29C *27/04;* **B65D** *41/04*
U.S. Cl. 156—262 **5 Claims**



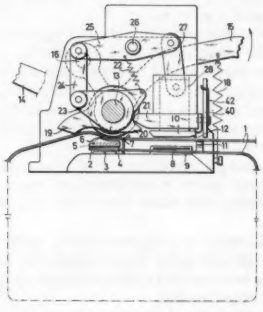
1. A method of manufacturing a metal cap having a primer layer covering the inside bottom surface thereof overlaid by a lining layer, comprising the steps of applying a primer layer to said cap where the primer layer has a thermal adhesiveness with respect to the lining layer and has an adhesiveness with respect to said cap, applying the lining layer to the bottom of said cap, and applying heat to a selected portion of the bottom of the cap whereby a selected part of the lining layer at the bottom of the cap will be thermally adhesively affixed to said primer layer and whereby the remaining unselected portion of the bottom of the cap which is unheated will be loosely positioned with respect to the remaining unselected part of the lining layer.

4,272,314

HAND-OPERATED TENSIONING AND WELDING APPARATUS FOR THERMOPLASTIC BANDS

Andras Banai, Stresemannstr. 5, 5000 Köln 90, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,301
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2825068
Int. Cl.³ B65B *13/32*
U.S. Cl. 156—494 **13 Claims**



1. In a hand-operated welding apparatus for bands of thermoplastic material, including clamping means for clamping one end portion of the band, tensioning means for forming a loop of said band above said one end portion, means for heating overlapping portions of said loop, means for compressing the heated overlapping portions, and means for cutting the other end portion of the band, a combination comprising a frame; a clearance control lever pivotably supported on said

frame and coupled to said clamping means and said tensioning means to open said clamping and tensioning means when rotated in one direction and to close said clamping means and said tensioning means when rotated in the other direction; a pivotable combined control lever pivotally supported on said clearance control lever; over-running coupling means arranged between said combined control lever and said tensioning means to activate the latter during the rotation of said combined control lever in said one direction and to overrun said tensioning means when said combined control lever is rotated in the opposite direction; delayed action coupling means cooperating with said combined control lever; and a linkage arranged between said delayed action coupling and said heating means, said compressing means and said cutting means to activate successively the heating, compressing and cutting means when said combined control lever is swung in said opposite direction, so that said combined control lever is operative for tensioning, welding and cutting said band.

4,272,315

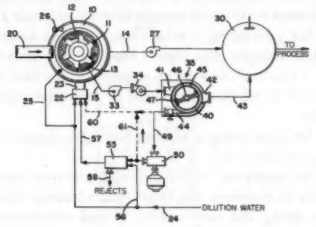
SECONDARY FIBER SYSTEM

Howard P. Espenmiller, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 667,675, Mar. 17, 1976, abandoned. This application Mar. 20, 1979, Ser. No. 22,101

Int. Cl.³ D21B *1/32, 1/34*

U.S. Cl. 162—4 **8 Claims**



1. The method of treating waste paper materials containing plastic and other floatable trash to recover paper fibers therefrom for reuse which comprises the steps of:

(a) supplying said materials and water to a vessel at rates maintaining the consistency of the resulting suspension in the range of approximately 2–8% solids content,

(b) continuously pulping said suspension in said vessel to reduce said materials to fragments,

(c) continuously extracting from said vessel a first fraction slurry comprising liquid and only such of said fragments as pass through holes of sufficiently small size to accept only fragments of the size of substantially defibered paper, said small holes being in the range of substantially ⅛ to 3/16 inch in diameter,

(d) continuously extracting from said vessel a separate second fraction slurry comprising liquid and such of said fragments as pass through holes sufficiently larger than said small extraction holes to pass pieces of partially defibered paper and correspondingly sized pieces of floating trash, said larger holes being in the range of substantially ½ to 1 inch in diameter

(e) cleaning said second extracted fraction by removal of high specific gravity contaminants therefrom,

(f) screening said cleaned fraction through small perforations of a size not larger than said small extraction holes,

(g) mixing the accepted stock from said screening step with said first extracted fraction,

(h) screening the rejected stock from said screening step through perforations of a size intermediate the sizes of said small and large extraction holes, and

(i) recycling the accepted stock from said second screening step to said vessel.

4,272,316

STEAM SHOWER

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 29, 1979, Ser. No. 43,002

Int. Cl.³ D21F *3/02*

U.S. Cl. 162—206 **2 Claims**

1. The method of removing water from a traveling paper web, which comprises the steps of:

passing the web through a press nip for expressing water therefrom with a felt engaging a first surface of the web;

immediately blanketing a second, exposed surface of the web with steam on the offrunning side of the nip before the web is exposed to air and as the web and felt are being released from the offrunning side of the nip, and substantially completely blanketing the web from the offrunning side of the nip and for a substantial distance downstream from the nip and excluding air from direct contact with the steam covered web; and

applying suction to the felt throughout said substantial distance downstream from the nip and drawing moisture from the web into the felt and drawing steam into the web.

4,272,317

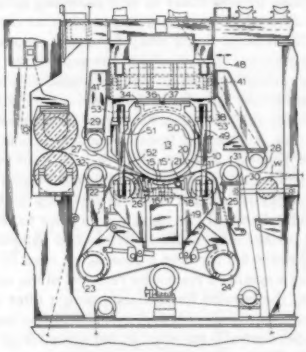
ROLL BEARING ALIGNMENT

Arnold J. Roerig, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 1, 1979, Ser. No. 90,276

Int. Cl.³ D21F *3/00;* B30B *3/04*

U.S. Cl. 162—272 **10 Claims**



1. An extended nip press for a paper making machine comprising in combination:

a main roll having end bearings at the roll ends;

a pressure shoe having a concave face defining an extended press nip with the roll;

means guiding a felt to pass through the nip receiving water expressed from a traveling web passing through the nip in a machine direction;

a looped belt passing through the nip between the shoe and web;

and a free pivot support for at least one of said end bearings enabling pivotal movement thereof in the cross-machine direction for accommodating effective changes in distances between said end bearings due to bending and temperature change of the roll.

4,272,318
APPARATUS FOR MAKING FILTER ELEMENTS FOR GAS OR LIQUID

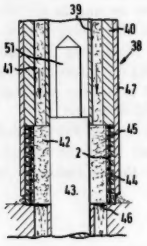
Brian Walker, Washington, and Kenneth Merrie, High Shincliffe, both of England, assignors to Process Scientific Innovations Limited, Durham, England

Division of Ser. No. 3,450, Jan. 15, 1979. This application Aug. 7, 1979, Ser. No. 64,598

Claims priority, application United Kingdom, Jan. 23, 1978, 2559/78

Int. Cl.[3] **D21J** *7/00*

U.S. Cl. 162—382 **3 Claims**



1. Apparatus for forming a compacted tubular mass of fibres to be bonded by a synthetic resin after removal of the mass from the apparatus, the bonded fibres constituting a filter element, the apparatus comprising a vertical cylindrical fine mesh screen, a central core centrally mounted in and spaced from said screen, an annular fine mesh screen extending between said core and said cylindrical screen so as to constitute a base of container means defining a tubular moulding space and otherwise defined by said core and said cylindrical screen, duct means for delivering a slurry of fibres in liquid peripherally around the top of said moulding space to accumulate a tubular mass of said fibres in said moulding space while the liquid is drained through said screens, further duct means for leading the drained liquid away from said screens, means for applying pressure to said slurry throughout its introduction into said moulding space, a reciprocable sleeve in sliding contact with said cylindrical fine mesh screen, and means for reciprocating said sleeve to progressively uncover said cylindrical screen as a mass of fibres builds upwards in said moulding space from said annular screen thereby to increase the area of said cylindrical screen through which the liquid can drain as said mass builds upward and, subsequently substantially to cover said cylindrical fine mesh screen prior to the accumulation of a further mass of fibres within said cylindrical screen.

2. Apparatus for forming a compacted mass of fibres to be bonded by a synthetic resin after removal of the mass from the apparatus, the bonded fibres constituting a filter element, the apparatus comprising a vertical cylindrical fine mesh screen, a central core centrally mounted in and spaced from said screen, an annular fine mesh screen extending between said core and said cylindrical screen so as to constitute a base of container means providing a moulding space and otherwise defined by said core and said cylindrical screen, duct means for delivering a slurry of fibres in liquid peripherally around the top of said moulding space to accumulate a tubular mass of said fibres in said moulding space while the liquid is drained through said screens, further duct means for leading the drained liquid away from said screens, means for applying pressure to said slurry throughout its introduction into said moulding space, said core being formed along its length with portions of different diameters, each portion having a length at least as long as said cylindrical screen, and means for longitudinally adjusting the position of said core relative to said cylindrical screen to vary the volume of said moulding space by bringing different portions of said core into register with said cylindrical fine mesh screen.

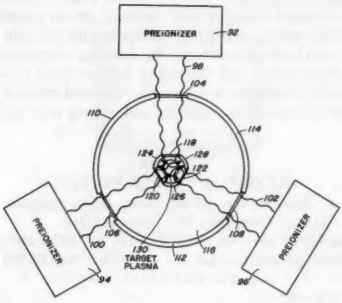
4,272,319
DEVICE AND METHOD FOR ELECTRON BEAM HEATING OF A HIGH DENSITY PLASMA

Lester E. Thode, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 882,024, Feb. 28, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,603

Int. Cl.[3] **G21G** *4/02;* **B23K** *9/00;* **G21B** *1/00*

U.S. Cl. 176—5 **17 Claims**



1. A device for relativistic electron beam heating of a high density plasma to kilovolt temperatures comprising:

means for generating a relativistic electron beam having a particle voltage of at least 3 MeV, a current density of at least 1 kA/cm^2, and a low relativistic electron beam temperature along the stream line of said relativistic electron beam;

means for producing a plasma having a density exceeding 10^{17} particles/cm^3;

means for applying said relativistic electron beam to said plasma to maintain said relativistic electron beam temperature along the stream line of said relativistic electron beam at a level sufficiently low to produce convective wave oscillations in said plasma, said convective wave oscillations created by relative drift between electrons of said relativistic electron beam and electrons of said plasma resulting from two stream and upper hybrid instabilities produced in said plasma by said relativistic electron beam;

whereby relativistic electron beam energy is deposited in said plasma to locally heat a small volume of said plasma to kilovolt temperatures at an efficiency which is a function of the strength parameter S, where:

$$S=(\gamma-\gamma^{-1})(n_b/2n_c)^{\frac{1}{3}}.$$

4,272,320
HIGH DENSITY LASER-DRIVEN TARGET

John D. Lindl, San Ramon, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

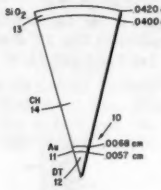
Filed Nov. 3, 1977, Ser. No. 848,427

Int. Cl.[3] **G21B** *1/00*

U.S. Cl. 176—9 **3 Claims**

1. In a system comprising means for extracting useful energy in a controlled manner from a target imploded by energy from at least one laser beam; the improvement comprising: a high density, substantially spherically configured, concentric shelled target consisting of a pusher shell consisting of Au, said pusher shell containing therein a quantity of fuel consisting of

DT; an ablator-pusher shell consisting of SiO_2, said ablator-pusher being positined in spaced relation about said pusher



shell forming a region therebetween filled with a material consisting of plastic foam.

4,272,321

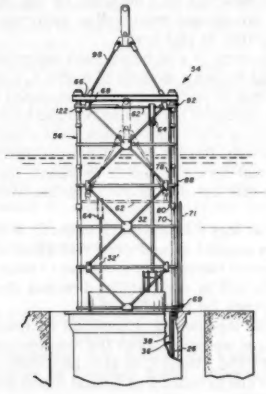
NUCLEAR REACTOR INTERNALS AND CONTROL ROD HANDLING DEVICE

George N. Betancourt, Manchester, and William W. Etzel, New Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 1, 1978, Ser. No. 911,628

Int. Cl.[3] G21C *7/08*

U.S. Cl. 176—87 **12 Claims**



1. For use in a nuclear reactor installation having a vertically reciprocable crane above a vertically oriented reactor vessel, the vessel containing a core, a plurality of control rods in the core and an upper guide structure in which are disposed a plurality of control rod drive shafts connected to the control rods, an apparatus for removing and reinserting the upper guide structure and control rods from the opened reactor vessel, comprising:

a rigid, vertical frame for placement on the upper guide structure having means at its lower end for selective attachment to the upper guide structure and having interference means at its upper end; and

a control rod support member vertically reciprocable within said frame, said support member including a horizontal platform having gripper means on its underside for simultaneously engaging each drive shaft, said platform including link means connectable to the crane for reciprocating said support member whereby the control rods may be withdrawn from the reactor core into the upper guide structure, said member further having selected surfaces adapted to abut said interference means when said platform is in its maximum vertical position relative to said frame whereby continued upward force by the crane is transferred through the link means to the frame so that the upper guide structure and control rods may be removed simultaneously from the reactor vessel.

4,272,322

METHOD FOR MANUFACTURING CHARCOALS FROM PAPER SLUDGE

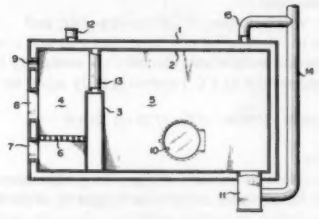
Masahiro Kobayashi, 12-38, Kamishimizu-cho, Shimizu-shi, Shizuoka-ken, Japan

Filed Apr. 3, 1979, Ser. No. 26,774

Claims priority, application Japan, Apr. 3, 1978, 53/38080; Aug. 28, 1978, 53/103885

Int. Cl.[3] C10B *47/06;* C10L *5/44*

U.S. Cl. 201—6 **4 Claims**



1. A method of manufacturing charcoal from paper sludge comprising the steps of mixing coffee pulps in an amount of 1 to 30 percent by weight with paper sludge having a moisture content of less than 50% whereby the coffee pulps absorb odors from the paper sludge, molding the resultant mixture into a desired configuration, preheating the resultant moldings to a temperature of about 400° C. whereby the odors from the paper sludge are completely absorbed by the coffee pulps, and subjecting the preheated moldings to a dry distillation at a temperature of about 400°–600° C. for between 1 and 3 days.

4,272,323

PROCESS FOR PRODUCING COKE

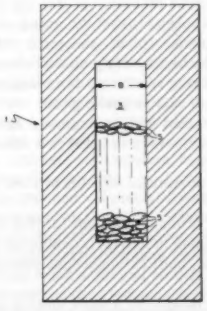
Robert Tettweiler, Buchholz-Ohlenfeld, and Hayri Ergun, Essen, both of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 877,388, Feb. 13, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 72,869

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2705971

Int. Cl.[3] C10B *17/00, 53/08*

U.S. Cl. 201—6 **8 Claims**



1. In a process for producing coke wherein briquettes, particularly molded briquettes of pitch-bound coal, are formed, said briquettes are introduced into a coking chamber of an

indirectly heated chamber oven, and said oven is operated to form said briquettes into coke, the improvement wherein:

said briquettes are formed according to the relationship:

$$k=0.5\times O_B/V_B\times(1-e)\times B,$$

wherein:

k = the ratio between the total surface area of the briquettes contacting the interior walls of said chamber to the total surface area of said interior walls;

O_B = the surface area (in m^2) of a briquette;

V_B = the volume (in m^3) of a briquette;

e = the ratio between the total volume of the gaps or empty spaces between briquettes in a pile or charge or briquettes in the chamber to the total volume of the charge of briquettes; and

B = the width (in meters) of the chamber; and

prior to introducing said briquettes into said chamber, the interior walls of said chamber are uniformly heated to a temperature t_K (°C.) approximately equal to:

$$t_K\cong 1000+[1000B-175]\times[1.23+0.1283(W-3)],$$

wherein:

B = the width (in meters) of the coking chamber; and

W = the initial water content (in weight % of the briquettes.

4,272,324

PROCESS FOR PRODUCING SHAFT FURNACE COKES

Yoshihiko Sunami, and Kunihiko Nishioka, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Continuation-in-part of Ser. No. 914,734, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 834,670, Sep. 19, 1977, abandoned. This application Aug. 22, 1979, Ser. No. 68,570

Int. Cl.³ C10B *55/02;* **C10L** *5/16*

U.S. Cl. 201—21 **7 Claims**

1. A process for producing a shaft furnace coke, said process consisting of

(a) finely crushing at least one porous, inert carbonaceous substance selected from the group consisting of powdered coke, coal gasification char, goal liquefaction residue coal, oil coke and semi-dry-distilled char;

(b) mixing and impregnating said finely crushed porous, inert carbonaceous substance of step (a) with at least one aromatic pitch selected from the group consisting of coal tar, coal tar pitch, asphalt, and pitch obtained by heat-treating or solvent-extracting an asphalt, said mixing and impregnating being conducted at a temperature above the melting point of said aromatic pitch,

(c) mixing said mixed and impregnated carbonaceous substance of step (b) with a crushed raw material coal (basic coal), and

(d) roasting the mixture of step (c) to form a shaft furnace coke.

2. A process for producing a shaft furnace coke as in claim 1 wherein said crushing in step (a) is conducted until the granularity of said porous, inert carbonaceous substance is less than 1 mm.

5. A process for producing a shaft furnace coke as in claim 1 wherein 50 to 95 parts by weight of finely crushed, porous, inert carbonaceous substance is mixed in said mixing and impregnating step (b) with 5 to 50 parts by weight of aromatic pitch.

4,272,325

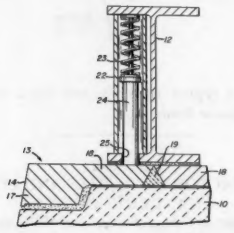
DOOR JAMB CONSTRUCTION FOR COKE OVENS

John F. McDermott, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 94,616, Nov. 15, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,742

Int. Cl.³ C10B *25/06*

U.S. Cl. 202—248 **10 Claims**



1. In a jamb having parallel horizontal and vertical legs for bounding an opening in a coke oven refractory wall and forming a frame against which a metal door seal may be pressed closing said opening, said jamb being adapted for use with spring means mounted on a buckstay for forcing the vertical legs thereof toward said oven wall to overcome the effect of thermal distortion on said jamb,

the improvement in which said jamb comprises:

vertical legs having a moment of inertia I_n in $in.^4$ in a direction normal to said oven wall as measured about a plane parallel thereto of between $h^2/550$ and $h^2/275$ where h is the height of said oven in inches, so that said vertical legs are relatively flexible in said normal direction so as to permit said spring means to minimize the gap formed between said legs and the oven wall due to thermal distortion,

said vertical legs also having a moment of inertia I_p in a direction parallel to said oven wall as measured about a plane normal thereto between 3 and 15 times I_n so as to be relatively stiff in said parallel direction thus minimizing any tendency for hourglassing,

said vertical legs having a torsional or polar moment of inertia I_t as measured about the longitudinal axis thereof between 1 and 3 times I_n so as to limit outward bulging of the jamb due to transfer of normal forces from said buckstay to said oven wall,

said jamb thus having properties enabling maintenance of geometry substantially the same as the original shape thereof when said oven is heated so as to prevent gaps between refractory and metal surfaces to which it mates on said oven.

4,272,326

ENHANCED DISTILLATION OF CYCLOHEXANOL FROM PHENOL WITH ADDITIONAL CYCLOHEXANONE FEED

Richard R. Hertzog, Morristown, and David Zudkevitch, Denville, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 24, 1980, Ser. No. 114,791

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—62 **9 Claims**

1. In a distillation process wherein a mixture comprising phenol, cyclohexanone and cyclohexanol is fed to a point intermediate the top and bottom of a distillation column, an overhead stream comprising cyclohexanone and cyclohexanol is withdrawn from a point adjacent the top of the column and a bottoms stream comprising phenol is withdrawn from adjacent the bottom of the column; the improvement which comprises feeding A stream consisting essentially of cyclohexanone

to a point below the point where the mixture is and in an amount sufficient to cause the cyclohexanol content of the bottoms stream to be reduced below the proportion of cyclohexanol in the azeotrope of cyclohexanol and phenol.

4,272,327
FORM AND LABEL COMBINATION

Emanuel L. Logan, 9406 Flower Ave., Silver Spring, Md. 20901

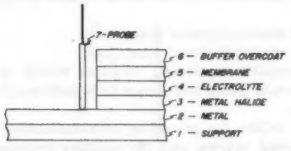
Filed Jun. 6, 1979, Ser. No. 45,994
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—1 B **4 Claims**

1. In combination, a form and a separate label for attachment to the form wherein the form includes a label placement area thereon which is substantially black in color for discouraging writing in the area by making writing in blue or black ink hard to see and wherein printed matter substantially covers the remainder of the form; wherein the label placement area has a visible instruction within the borders thereof which is light in color in contrast to the label placement area which is substantially black in color, the instruction instructing one to place the label in the label placement area; and wherein the label includes code means for identifying a particular party to whom the form relates and an adhesive layer for attachment of the label to the label placement area.

4,272,328
BUFFER OVERCOAT FOR CO_2 ION-SELECTIVE ELECTRODES

Sang H. Kim, Rochester, N.Y., and Hao-jan Chang, Santa Clara, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,588
Int. Cl.³ G01N *27/46*; B01D *1/36*
U.S. Cl. 204—1 T **18 Claims**

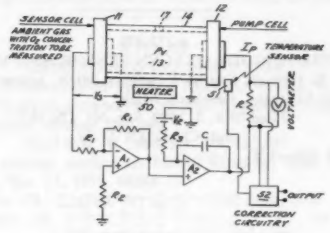


1. In an ion-selective electrode for analyzing CO_2 concentration in a liquid comprising a support having thereon a layer or layers having sequentially metal/metal halide reference electrode zones, an electrolyte zone and a membrane zone containing an ionophore, the improvement wherein said membrane zone is positioned between said electrolyte zone and an adjacent zone comprising a hydrophilic binder and a buffer in an amount sufficient to provide a solution having a pH in the range of 7.5 to 9.5 when wetted with about 5 μl of liquid to be analyzed.

4,272,329
STEADY STATE MODE OXYGEN SENSOR AND METHOD

Robert E. Hetrick, Dearborn Heights, and William A. Fate, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1980, Ser. No. 126,606
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—1 T **10 Claims**



1. An electrochemical apparatus for making a measurement of oxygen partial pressure in an ambient environment including other gaseous materials, said electrochemical apparatus including:

a solid electrochemical pump cell;

a solid electrochemical sensor cell;

an associated supporting structure which in combination with said pump and sensor cells defines an enclosed volume;

a leak orifice for providing communication between said enclosed volume and the ambient environment so that when said enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside said enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

an external circuit means coupled to said pump cell to apply an electrical input to said pump cell and coupled to said sensor cell for measuring an electrical output generated by said sensor cell in response to said electrical input at said pump cell, said external circuit means including a control means to apply a current of sufficient magnitude as said electrical input to maintain a constant voltage across said sensor cell, and said external circuit means including sensing means for sensing the magnitude of said electrical input which is proportional to the percentage of oxygen in the ambient environment thus permitting said electrochemical apparatus to be used as a sensor of the percentage of oxygen;

said pump and sensor cells being formed of platelets of solid ionic conductors capable of conducting oxygen ions, and including two electrode layers attached to opposing faces of each of said platelets, and lead wire attached to each of said electrodes for coupling said first and second circuit means to said pump and sensor cells, respectively.

7. A method for making a measurement of oxygen partial pressure in an ambient environment having other gaseous material including the steps of:

establishing an enclosed volume with restricted access to the ambient environment, the enclosed volume being bounded by a solid electralyte electrochemical pump cell and a solid electrolyte electrochemical sensor cell, and the restricted access being sufficient so that when the enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside the enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

applying to the pump cell an electrical current of sufficient

magnitude to maintain a constant voltage across the sensor cell so that the magnitude of the electrical input is proportional to the percentage of oxygen in the ambient environment thus determining the percentage of oxygen;

measuring the magnitude of the current drawn through the pump cell;

measuring an electrical output generated by the sensor cell in response to the electrical input at the pump cell; and

calculating the oxygen percentage using a proportionality with the input current to the pump cell.

4,272,330

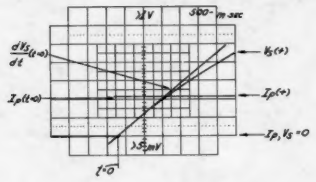
TRANSIENT MODE OXYGEN SENSOR AND METHOD

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1980, Ser. No. 126,747

Int. Cl.[3] G01N *27/58*

U.S. Cl. 204—1 T **11 Claims**



1. An electrochemical apparatus for making a measurement of oxygen partial pressure in an ambient environment including other gaseous materials, said electrochemical apparatus including:

a solid electrochemical pump cell;

a solid electrochemical sensor cell;

an associated supporting structure which in combination with said pump and sensor cells defines an enclosed volume;

a leak orifice for providing communication between said enclosed volume and the ambient environment so that when said enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside said enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

a first circuit means coupled to said pump cell to apply an electrical input to said pump cell, said electrical input being a voltage step function with an abruptly rising leading edge with respect to time having a polarity suitable for withdrawing oxygen from said enclosed volume, and said first circuit means including measuring means for measuring the magnitude of the current drawn through said pump cell as a result of the voltage step function;

a second circuit means coupled to said sensor cell for measuring an electrical output generated by said sensor cell in response to said electrical input at said pump cell, said electrical output having a relatively simple relationship to the ambient oxygen partial pressure so that said electrochemical apparatus can be used as a sensor of the oxygen partial pressure, said second circuit means being adapted to measure the first derivative with respect to time of the sensor voltage, as induced by the pumping action of said pump cell when the voltage step is applied to said pump cell, said voltage step rising in magnitude with respect to time faster than the sensor voltage; and

said pump and sensor cells being formed of platelets of solid ionic conductors capable of conducting oxygen ions and including two electrode layers attached to opposing faces of each of said platelets, and lead wire attached to each of said electrodes for coupling said external circuit means to said pump and sensor cells.

8. A method for making a measurement of oxygen partial pressure in an ambient environment having other gaseous material including the steps of:

establishing an enclosed volume with restricted access to the ambient environment, the enclosed volume being bounded by a solid electrolyte electrochemical pump cell and a solid electrolyte electrochemical sensor cell, and the restricted access being sufficient so that when the enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside the enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

applying to the pump cell an electrical voltage step function with an abruptly rising leading edge having a polarity suitable for withdrawing oxygen from the enclosed volume;

measuring the magnitude of the current drawn through the pump cell as a result of applying the voltage step function;

measuring an electrical output generated by the sensor cell in response to the electrical input at the pump cell, the electrical voltage step function being chosen to rise in magnitude with respect to time faster than the electrical output; and

calculating the oxygen partial pressure using an inverse relationship with the first derivative of the voltage measured at the sensor cell.

4,272,331

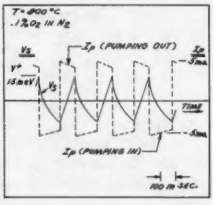
OSCILLATORY MODE OXYGEN SENSOR AND METHOD

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1980, Ser. No. 126,607

Int. Cl.[3] G01N *27/58*

U.S. Cl. 204—1 T **8 Claims**



1. An electrochemical apparatus for making a measurement of oxygen partial pressure in an ambient environment including other gaseous materials, said electrochemical apparatus including:

a solid electrochemical pump cell;

a solid electrochemical sensor cell;

an associated supporting structure which in combination with said pump and sensor cells defines an enclosed volume;

a leak orifice for providing communication between said enclosed volume and the ambient environment so that when said enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside said enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

an external circuit means coupled to said sensor cell for measuring an EMF across said sensor cell and coupled to said pump cell for applying an oscillatory pump cell current and thus producing a concurrent oscillation in the sensor cell EMF such that the period of the oscillations increases monotonically with the partial pressure of oxygen in the ambient and can be calibrated so as to be used as a sensor of the partial pressure of oxygen;

said external circuit means having as an input the EMF generated by said sensor cell and having an output which causes oxygen to be withdrawn (injected) from (into) said enclosed volume, depending upon the polarity of the output current, until said sensor cell EMF reaches a predetermined reference value at which point the output current is changed so that the change of flux of oxygen is in the original direction, such changes in direction continuing in an oscillatory fashion; and

said pump and sensor cells being formed of platelets of solid ionic conductors capable of conducting oxygen ions and including two electrode layers attached to opposing faces of each of said platelets, and lead wire attached to each of said electrodes for coupling said external circuit means to said pump and sensor cells.

6. A method for making a measurement of oxygen partial pressure in an ambient environment having other gaseous material including the steps of:

establishing an enclosed volume with restricted access to the ambient environment, the enclosed volume being bounded by a solid electrolyte electrochemical pump cell and a solid electrolyte electrochemical sensor cell, and the restricted access being sufficient so that when the enclosed volume is immersed in an ambient environment containing a partial pressure of oxygen there is a tendency for the partial pressure of oxygen inside the enclosed volume to equalize with the partial pressure of oxygen of the ambient environment;

applying to the pump cell an oscillatory pump cell current;

measuring an electrical output generated by the sensor cell in response to the oscillatory pump cell current at the pump cell;

determining the period of the oscillatory pump cell current to be determined by the time it takes for the sensor cell EMF to reach a first predetermined reference value traveling in a first increasing direction, and a second predetermined reference value traveling in a second decreasing direction; and

calculating the oxygen partial pressure using a proportionality with the period of oscillation.

4,272,332
METHOD FOR MAKING TABLE KNIVES HAVING A SILVER-PLATED HANDLE

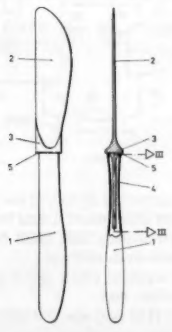
Werner Probost, Deggingen, Fed. Rep. of Germany, assignor to Wurttembergische Metallwarenfabrik, Geislingen an der Steige, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 55,311

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829776

Int. Cl.[3] **C25D** *5/02;* **B25G** *3/00;* **B21K** *11/02*

U.S. Cl. 204—15 **2 Claims**



1. A method for making table knives and the like having a handle consisting mainly of metal, and a blade inserted therein and having a blade foot portion, wherein the handle is electrolytically silver-plated and the blade foot portion is ground flush with the handle, characterized in that prior to or during insertion into the not yet silver-plated handle, the blade including its foot portion and shank is electrically insulated from the handle by coating with an electrically insulating dipping varnish or by inserting an insulating disk between the handle and blade and embedding same within the handle in a ceramic cement composition or synthetic resin composition having non-conductive properties after drying, and in that subsequently the blade foot portion is ground flush prior to the handle being silver-plated.

4,272,333
MOVING BED ELECTROLYSIS

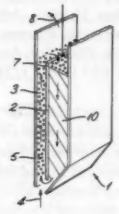
Keith Scott, Stockton-on-Tee, and Allen R. Wright, Wallsend, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 4, 1980, Ser. No. 127,245

Claims priority, application United Kingdom, Mar. 7, 1979, 08039/79; Nov. 21, 1979, 40284/79

Int. Cl.[3] **C25D** *5/04, 17/12;* **C25C** *1/00, 7/02*

U.S. Cl. 204—23 **14 Claims**



1. A method of moving bed electrolysis, in which a packed bed comprising conductive particles moves as a packed bed in an electrolyte between two electrodes and in electronic contact with one of said two electrodes, the particles emerging from a downstream end of the moving packed bed being transported, outside the electric field between the two electrodes, to a location from which substantially all of the particles join one of the moving packed bed at an upstream end and an upstream end of a succeeding moving packed bed between the electrodes.

4,272,334
METHOD OF FLUIDIFICATION OF LIQUID BETWEEN PLANE PARALLEL PLATES BY JETTING THE LIQUID

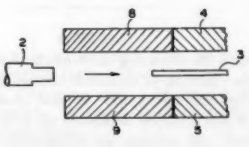
Shuzo Fukuda, Yokohama; Tsutomu Watanabe, Yokosuka, and Masahiro Abe, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,078

Claims priority, application Japan, Jan. 12, 1979, 54-1261

Int. Cl.[3] **C25D** *5/08, 7/06, 21/10*

U.S. Cl. 204—27 **7 Claims**



1. A method wherein a pair of plane parallel plates each formed by at least one electrode are arranged one above another in a spaced parallely opposing relation within an electrolytic treating tank filled with an electrolyte and having a plu-

rality of nozzles laterally arranged on one side of said tank, a strip of metal to be subjected to an electrolytic treatment is passed between said pair of plane parallel plates, and said electrolyte between said plane parallel plates is fluidified by jets of liquid from said nozzles, wherein said nozzles are arranged at predetermined spaces such that a half-value width of jets from the respective adjacent ones of said nozzles overlap each other at one edge of said plane parallel plates on the side of said nozzles to thereby make uniform the flow velocity of said electrolyte between said plane parallel plates, and wherein at least one plane dummy plate is disposed between said nozzles and at least one of said plane parallel plates such that said at least one dummy plate adjoins one end of said one of said plane parallel plates and extends toward said nozzles entirely in the same plane with said one plane parallel plate to thereby reduce the diminution of the flow velocity of said jets.

4,272,335

COMPOSITION AND METHOD FOR ELECTRODEPOSITION OF COPPER

Daniel J. Combs, Sterling Heights, Mich., assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Feb. 19, 1980, Ser. No. 122,204
Int. Cl.³ C25D *3/38*
U.S. Cl. 204—52 R **12 Claims**

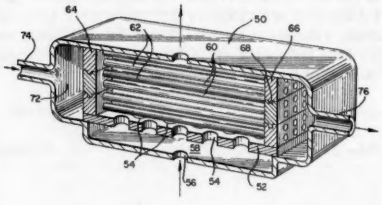
1. In a bath for the electrodeposition of copper, which bath comprises an aqueous acidic solution containing copper in an amount sufficient to electroplate copper on a substrate, the improvement which comprises including in said bath a brightening amount sufficient to produce a bright copper electrodeposit, of a compound comprising a substituted phthalocyanine radical.

4,272,336

METHOD AND APPARATUS FOR FORMING NITRIC OXIDE FROM AMMONIA

Costas G. Vayenas, Wellesley Hills, Mass., and David E. Ortman, Rochester, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 27, 1979, Ser. No. 61,373
Int. Cl.³ C25B *1/00;* **C01B** *21/26, 21/28;* **H01M** *8/12*
U.S. Cl. 204—59 R **10 Claims**



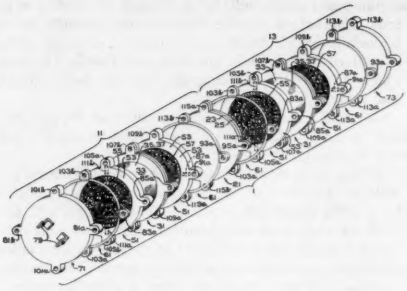
1. The process for oxidizing ammonia to form nitric oxide which comprises passing an ammonia-containing feed gas at a temperature between about 500° C. and about 1000° C. in contact with a first catalyst deposited on a first surface of a solid electrolyte and passing an oxygen-containing gas in contact with a second catalyst deposited on a second surface of said solid electrolyte, said first catalyst being capable of promoting the oxidation of ammonia to nitric oxide, said second catalyst being capable of dissociating oxygen gas to form oxygen ions, said solid electrolyte being capable of transporting said oxygen ions to contact said ammonia to form nitric oxide.

4,272,337

SOLID POLYMER ELECTROLYTE CHLOR-ALKALI ELECTROLYSIS CELL

William B. Darlington, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1979, Ser. No. 15,521
Int. Cl.³ C25B *1/46, 9/00*
U.S. Cl. 204—98 **20 Claims**



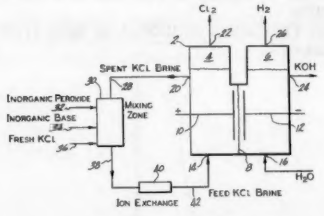
9. In an electrolytic cell having a solid polymer electrolyte comprising a cation selective permionic membrane, an anodic electrocatalyst on an anodic first surface of the permionic membrane, and a cathodic electrocatalyst on a cathodic, second surface of the permionic membrane, opposite the first surface thereof, the permionic membrane being a fluorinated cation exchange membrane having carboxylic acid groups as the ion exchange groups, said permionic membrane having an ion exchange capacity of about 0.5 to 2.0 milliequivalents per gram of dry polymer, and a glass transition temperature above about −80° C. and below about 90° C., the improvement wherein the solid polymer electrolyte comprises means for internally wetting the permionic membrane.

4,272,338

PROCESS FOR THE TREATMENT OF ANOLYTE BRINE

Richard W. Lynch, Chattanooga; Garland E. Hilliard, and Ronald L. Dotson, both of Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 6, 1979, Ser. No. 46,403
Int. Cl.³ C25B *1/46*
U.S. Cl. 204—98 **28 Claims**



1. A process for removing dissolved halogen gas and oxyhalide ions from a spent alkali metal halide brine containing them which comprises circulating said spent brine to a treatment zone outside an electrolysis cell and:

(a) reacting said aqueous alkali metal halide brine with an inorganic peroxide, and

(b) adjusting the pH of said aqueous alkali metal halide brine to a pH within the range from about 5 to about 11 with an inorganic base,

whereby a purified alkali metal halide solution of reduced concentration of said dissolved halogen gas and oxyhalide ions

is produced; and circulating said purified solution back to the cell.

4,272,339

PROCESS FOR ELECTROWINNING OF METALS

Bill J. Knight, 1000 Silvertree, Tucson, Ariz. 85716, and David L. Knight, 4950 N. Camino de Oesta, Tucson, Ariz. 85705

Continuation-in-part of Ser. No. 128,444, Mar. 10, 1980, abandoned. This application Jun. 30, 1980, Ser. No. 164,288

Int. Cl.³ C25C *1/08, 1/12, 1/16*

U.S. Cl. 204—106 **9 Claims**

1. In an electrowinning process for recovering a selected metal from an aqueous electrolyte containing ions of the selected metal, the process being performed in an electrolytic cell containing the electrolyte with spaced apart anodes and cathodes disposed therein, an electrical potential being produced between said anodes and cathodes for causing electrolysis within said cell to result in the deposition of the selected metal on said cathodes, the improvement comprising the step of using within the electrolytic cell anodes which are formed from a lead alloy containing from about 0.05 to about 0.25% by weight strontium.

4,272,340

ELECTROWINNING OF LEAD FROM H_2SIF_6 SOLUTION

Ernest R. Cole, Jr., Newburg; Agnes Y. Lee, and Danton L. Paulson, both of Rolla, all of Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 108,191, Dec. 27, 1979. This application Jun. 30, 1980, Ser. No. 164,759

Int. Cl.³ C25D *3/34*

U.S. Cl. 204—114 **5 Claims**

1. A process for electrowinning of lead comprising:

(1) providing an electrolyte cell consisting essentially of

at least one anode consisting essentially of a titanium substrate and an electrodeposited lead oxide coating having a uniform, dense grain size and structure,

at least one cathode consisting essentially of lead, and

an electrolyte comprising an aqueous solution of lead fluosilicate, free fluosilicic acid and a phosphorus compound in an amount sufficient to provide a concentration of phosphorus of about 0.75 to 3 gpl in the solution, and

(2) establishing a direct current between anode and cathode to effect electrodeposition of lead on the cathodes.

4,272,341

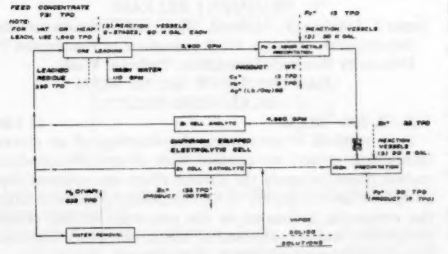
PROCESS FOR RECOVERY OF METAL VALUES FROM LEAD-ZINC ORES, EVEN THOSE HAVING A HIGH CARBONATE CONTENT

Frank E. Lamb, Tucson, Ariz., assignor to Duval Corporation, Houston, Tex.

Filed Jan. 9, 1980, Ser. No. 110,569

Int. Cl.³ C25C *1/16, 1/18;* **C25B** *1/02*

U.S. Cl. 204—118 **42 Claims**



1. A chemical, electro-chemical process for recovering metal values from a zinc- or lead-containing material comprising:

in a solubilization stage, oxidizing the zinc- or lead-containing material by treating said material with a ferric chloride leach solution until there is substantial solubilization of the zinc or lead content of the material into said solution in the form of zinc or lead chloride, thereby also reducing ferric chloride to ferrous chloride and forming a pregnant liquor;

when solubilized lead is present, separating it from the pregnant liquor forming an essentially lead free solution and recovering the separated lead;

dividing this essentially lead free solution into two portions;

passing one portion of the essentially lead free solution into the anolyte compartment of a Zn° producing electrolysis stage for use as the ferrous ion-containing anolyte thereof;

separating iron from the second portion of the essentially lead free solution, forming an essentially iron free solution;

passing the essentially iron free solution into the catholyte compartment of said Zn° producing electrolysis stage for use as the catholyte thereof;

conducting electrolysis in said Zn° producing electrolysis stage, thereby regenerating ferric chloride leach solution in the anolyte by oxidizing ferrous ions to ferric ions, and reducing zinc ions in the catholyte to Zn°; and

recovering the Zn° produced in the electrolysis stage.

4,272,342

ELECTROLYTIC GRAINING METHOD

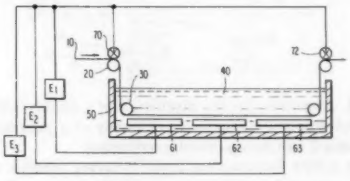
Kazutaka Oda, and Hisao Ohba, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 14, 1980, Ser. No. 178,065

Claims priority, application Japan, Aug. 15, 1979, 54/103904

Int. Cl.³ C25F *3/04*

U.S. Cl. 204—129.4 **16 Claims**



1. A method for electrolytically graining the surface of an aluminum plate comprising passing an alternating current through the aluminum plate in an acidic electrolyte solution, wherein the alternating current is passed so that

$$Q_1 > Q_2 < Q_3 \quad (I)$$

wherein Q_1, Q_2 and Q_3 represent the quantities of electricity per unit area of application, respectively, during the first $\frac{1}{3}$ period, the intermediate $\frac{1}{3}$ period, and the final $\frac{1}{3}$ period, of the total electrolytic graining time.

4,272,343

PROCESS FOR THE ELECTROLYTIC REDUCTIVE LEACHING OF ILMENITE ORE

Dennis A. Brunsell, Oklahoma City, and Olen L. Riggs, Jr., Bethany, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jan. 9, 1980, Ser. No. 110,674

Int. Cl.³ C25C *1/00*

U.S. Cl. 204—130 **8 Claims**

1. A process for beneficiation of ilmenite ore, comprising:

admixing ilmenite ore with an acidic solution;

electrolytically reducing at least a portion of said ilmenite

ore contained in said admixture to convert ferric iron in said ilmenite ore into ferrous iron; and

dissolving a substantial portion of said ferrous iron from said ilmenite ore to produce beneficiated ilmenite ore.

4,272,344

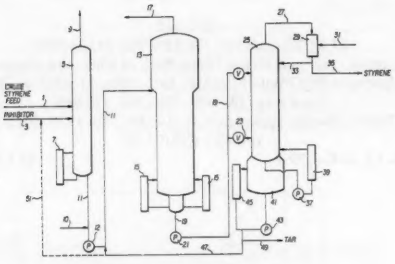
POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUNDS

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 925,818, Jul. 18, 1978, which is a continuation-in-part of Ser. No. 771,438, Feb. 24, 1977, Pat. No. 4,105,506. This application Aug. 30, 1979, Ser. No. 71,379

Int. Cl.³ B01D *3/34;* **C07C** *7/05, 7/20*

U.S. Cl. 202—154 **5 Claims**



1. Apparatus for the distillation of a readily polymerizable vinyl aromatic compound employing as a polymerization inhibitor 2,6-dinitro-p-cresol, comprising:

a. a first fractionation column having reboiler means connected thereto for maintaining the bottoms of said column at a proper temperature, feed lines for introducing a vinyl aromatic compound into said column, and product lines for recovering an overhead product and a bottoms fraction therefrom;

b. means for introducing said polymerization inhibitor into the bottoms of said first fractionation column;

c. a second fractionation column having reboiler means connected thereto, a feed line for transporting the bottoms of said first column to said second column for further distillation, and a product line for recovering an overhead product and a bottoms fraction;

d. a third fractionation column having reboiler means connected thereto, a feed line for transporting the bottoms of said second column to said third column for further distillation, and a product line for recovering an overhead product of high purity vinyl aromatic compound and a bottoms fraction;

e. a flash stripper connected to said third fractionation column for vaporizing residual vinyl aromatic compound from the bottoms fraction of said third column and recycling the vaporized vinyl aromatic compound from said bottoms of said third column back to said third column; and

f. means for recycling a portion of the bottoms of said flash stripper back to said second column.

4,272,345

ENERGY CONSERVATION TECHNIQUE

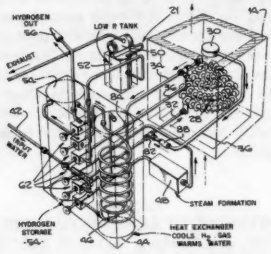
Sam L. Leach, P.O. Box 1190, Pebble Beach, Calif. 93953

Continuation-in-part of Ser. No. 65,188, Aug. 9, 1979, which is a continuation-in-part of Ser. No. 879,226, Feb. 21, 1978, Pat. No. 4,193,879, which is a continuation-in-part of Ser. No. 790,320, Apr. 25, 1977, Pat. No. 4,113,589, and Ser. No. 834,682, Sep. 19, 1977, Pat. No. 4,148,701. This application Oct. 29, 1979, Ser. No. 89,527

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.³ B01J *19/08;* **C01B** *3/06, 15/01*

U.S. Cl. 204—157.1 R **22 Claims**



1. An apparatus for generating hydrogen gas or hydrogen peroxide from waste heat in which the waste heat is going up a chimney or a stack as heated gases, comprising:

a heat exchanger structure exposed to said heated gases, said gases having a predetermined temperature;

a reactant including at least one metal oxide having more than one oxidation state, and having the property of dissociating oxygen and returning to its lower oxidation state at atmospheric pressure at a temperature below said predetermined temperature, and of sequestering oxygen from water vapor at elevated pressure at said temperature;

means for mounting said reactant to be heated by said heat exchange structure substantially to said predetermined temperature;

means for supplying water vapor to said reactant at an elevated pressure to form hydrogen gas and/or hydrogen peroxide as said reactant is oxidized;

means for reducing the pressure to disproportionate oxygen from the reactant;

means for providing spaces within said reactant;

host and sensitizer means located adjacent said spaces to absorb heat energy and to radiate high intensity energy within the absorption bands of said water vapor into said spaces to dissociate a portion of said water vapor.

4,272,346

TREATMENT OF CARBON FIBERS TO DECREASE ELECTRICAL HAZARDS OF CONDUCTIVE FIBER FRAGMENT RELEASE

James J. Jakubowski, Midland, Mich., and Ravanasamudram V. Subramanian, Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Filed Dec. 3, 1979, Ser. No. 99,516

Int. Cl.³ C25D *13/12*

U.S. Cl. 204—181 R **15 Claims**

1. A method of preventing the shorting of an electrical component caused by contact with electrically conductive carbon fibers, wherein the carbon fibers are released from a composite upon exposure of the composite to fire, and wherein the composite is located in the proximity of the electrical component and is comprised of the carbon fibers and a polymeric matrix material, which comprises:

electrocoating the surfaces of the carbon fibers before incorporation thereof into the composite with a coating mate-

rial that will accelerate the decomposition of the coated carbon fibers when the composite is exposed to fire or which will lead to the formation of a high electrical resistance coating in situ or fiber clumps when the coated carbon fibers within the composite are subsequently exposed to fire, the composite being adapted for use in the proximity of the electrical component such that upon exposure of the composite to fire the decomposition products of the composite will be free from electrically conductive, short circuit-causing carbon fibers.

4,272,347

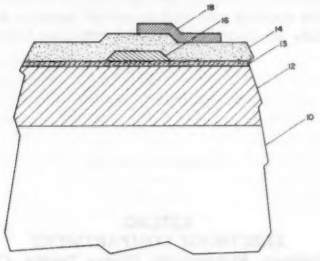
BUBBLE MEMORY OPTIMIZATION BY ADJUSTING PROPERTIES OF QUARTZ FILM

Martin J. Casey, Lansdale; Barry F. Stein, Dresher, and Herman E. Wetterskog, Douglasville, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 5, 1977, Ser. No. 839,699

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 D **4 Claims**



1. The method of fabricating an improved bubble memory device having at least one quartz layer separating two conductive surfaces comprising the step of

a. depositing said layer with a p-etch rate on the order of 4 Å/second at approximately a 60° C. substrate temperature, said rate providing said quartz with a characteristic to minimize local stress fields formed in a bubble layer of said memory device wherein said minimization optimizes said device performance.

4,272,348

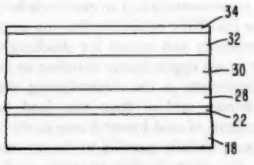
BUBBLE DEVICE FABRICATION

Daniel E. Cox, Ossining, N.Y.; Susan M. Kane, New Fairfield, Conn., and John V. Powers, Shenorock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,251

Int. Cl.³ C23C *15/00*; C23F *1/02*

U.S. Cl. 204—192 E **17 Claims**



1. A method for fabricating a bubble domain device, comprising the steps of:

depositing a first continuous device layer of electrically conductive, non-magnetic material on a substrate comprising a magnetic film in which bubble domains can be moved,

depositing a second continuous device layer of magnetically soft material on said first layer,

depositing a thin first masking layer of a material which etches less rapidly than the materials comprising said first and second device layers onto said second device layer,

forming a thin patterned second masking layer over said first masking layer using a thin resist layer of thickness less than the thickness of either of said first and second device layers,

patterning said first masking layer by etching said first masking layer through said patterned second masking layer,

producing magnetic propagation elements which are separated from each other by gaps of 0.5 micron and less by patterning said first and second device layers by etching said device layers through said patterned first masking layer to form said bubble domain device, portions of said second device layer being patterned to provide magnetic propagation elements for moving said bubbles in said magnetic film.

4,272,349

CATALYST SUPPORTED OXYGEN SENSOR WITH SENSOR ELEMENT HAVING CATALYST AND PROTECTIVE LAYERS AND A METHOD OF MANUFACTURING SAME

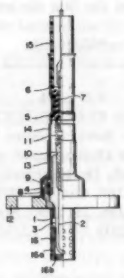
Toshinobu Furutani, Toyota; Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, Toyota; Shinichi Matsumoto, Toyota, and Hiroshi Wakisaka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 25, 1980, Ser. No. 115,450

Claims priority, application Japan, Feb. 7, 1979, 54-13098; Feb. 7, 1979, 54-13099

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 S **10 Claims**

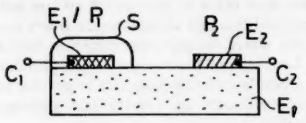


1. In an oxygen sensor comprising an oxygen sensor element having an oxygen-ion conductive electrolyte container with one end closed, an inner electrode provided on the inner surface of the electrolyte container, an outer electrode provided on the outer surface thereof, and an electrode protective layer formed on the outer surface of the electrode layer and a louver having an inner and an outer louver positioned over the oxygen sensor element and in a spaced relation to each other, the improvement which comprises a catalyst layer formed on the outer surface of the electrode protective layer, said catalyst layer being protected by an outer catalyst protective layer of alumina, and said inner louver being provided with a three layer coating, the innermost layer acting as a buffer to lessen heat expansion of the louver material, the middle layer being composed of alumina or spinel, and the outer protective layer having substantially the same composition as said catalyst protective layer performing also a function as a catalyst poison getter.

4,272,350
ELECTROCHEMICAL SENSOR FOR MEASURING CONCENTRATIONS OF SPECIES IN A FLUID MIXTURE, OF THE TYPE COMPRISING A PARTIAL-PRESSURE INTERNAL REFERENCE ELECTRODE

Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 12, 1979, Ser. No. 102,915
Claims priority, application France, Dec. 12, 1978, 78 34880
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—195 S **7 Claims**



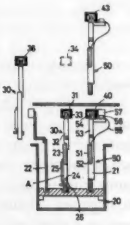
1. An electrochemical sensor for measuring the concentrations of species contained in a fluid mixture and comprising an electrochemical cell having a flat structure, said cell being constituted by a first partial-pressure internal reference electrode having one face either wholly or partly in contact with a solid electrolyte which is an ionic conductor for one of the species of said fluid mixture or for an ion which is capable of reacting with said species, and by a second electrode which communicates with the fluid mixture to be analyzed, one face of said second electrode being either wholly or partly in contact with said solid electrolyte, all the other faces of said first electrode abutting and being protected by an inert envelope and said envelope being impervious to the species which are present in said fluid mixture;

wherein said first electrode and said second electrode are both deposited on the same face or on opposite faces of said solid electrolyte and are so arranged with respect to each other such that the first electrode or the projection thereof in the plane of said second electrode is in adjacent relation to said second electrode.

4,272,351
APPARATUS FOR ELECTROLYTIC ETCHING

Yasutoyo Kotani; Kazuo Sawada; Shuzo Nagai; Takao Ogino, and Seiji Watabe, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 955,168, Oct. 27, 1978, Pat. No. 4,220,508.
This application Jan. 25, 1980, Ser. No. 115,276
Int. Cl.³ C25D *17/08, 17/28, 17/06*
U.S. Cl. 204—202 **3 Claims**



1. An apparatus for electrolytic etching comprising:

an electrolytic bath tank for containing an electrolyte therein;

an anode plate and a spaced opposed cathode plate located within said tank so as to be immersed in electrolyte when said tank contains electrolyte therein;

first guide means disposed between said anode plate and said cathode plate;

second guide means located parallel to said first guide means;

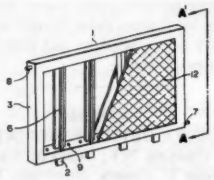
a plurality of insulating frames, each of said frames having at least one opening therethrough and adapted for supporting a workpiece respectively thereon for etching said workpiece, said workpiece being mounted with the side of said workpiece to be etched facing said cathode plate, said first and second guide means located for supporting and guiding said insulating frames thereon; and

third guide means disposed at the ends of said first and second guide means for transferring said insulating frames from said first guide means to said second guide means whereby said insulating frames can be circulated along and between said first and second guide means.

4,272,352
ELECTRODE COMPARTMENT

Tanzo Jizaimaru, Shikawatashi; Hideya Tanaka, Chiba, and Yasuo Sajima, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 45,932
Claims priority, application Japan, Jun. 14, 1978, 53-70993
Int. Cl.³ C25B *9/02, 9/04, 15/08*
U.S. Cl. 204—279 **4 Claims**

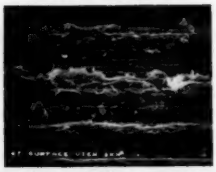


1. In an electrode compartment of an electrolyzing chamber surrounded by frame members, said electrode compartment comprising at least one lead bar for electrically connecting an electrode to a power source and an electrode held in communication with the lead bars, means for feeding an electrolyte in a lower frame member and means for discharging an electrolyzed product in an upper frame member to result in lifting flow of the electrolyte in the electrolyzing chamber, an improvement wherein said at least one lead bar is inserted through the bottom of said lower frame in the vertical direction and held substantially parallel to the upward flow of said electrolyte in the electrolyzing chamber and wherein said electrode is mechanically held by fitting means mounted on said at least one lead bar to thereby electrically connect said at least one lead bar to said electrode, and wherein said at least one lead bar is substantially quadrilateral in section and said fitting means include a quadrilateral hollow into which said at least one lead bar is inserted for continuous contct about the periphery of said lead bar.

4,272,353
METHOD OF MAKING SOLID POLYMER ELECTROLYTE CATALYTIC ELECTRODES AND ELECTRODES MADE THEREBY

Richard J. Lawrance, Hampstead, N.H., and Linda D. Wood, Andover, Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Feb. 29, 1980, Ser. No. 125,825
Int. Cl.[3] C25B *11/00, 13/08*
U.S. Cl. 204—283 11 Claims

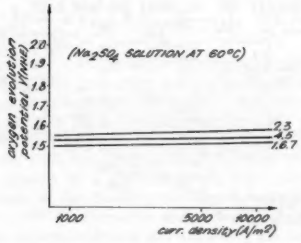


1. An electrode comprising a solid polymer electrolyte membrane base member having at least one abraded surface and finely-divided catalytic particles fixed upon the abraded surface.

4,272,354
ELECTRODES FOR ELECTROLYTIC PROCESSES

Vittorio de Nora, Nassau, The Bahamas; Antonio Nidola, Milan, Italy; Placido M. Spaziante, Lugano, Switzerland, and Giuseppe Bianchi, Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

Filed Nov. 26, 1979, Ser. No. 97,346
Int. Cl.[3] C25B *11/06, 11/10*
U.S. Cl. 204—290 R 7 Claims

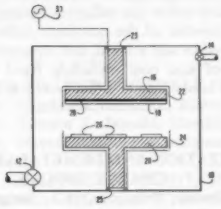


1. An ion selective anode comprising an electrically conductive substrate having a surface coating selected from (a) one or more platinum group metals, (b) one or more platinum group metal oxides, (c) mixtures of one or more platinum group metal oxides with one or more valve metal oxides, and (d) oxides of metals from the group consisting of chromium, molybdenum, tungsten, manganese, iron, cobalt, nickel lead, germanium, antimony, arsenic, zinc, cadmium, selenium and tellarium, said surface coating and conductive substrate being joined by an intermediate coating consisting of one or more layers of a solid solution of a mixture of tin dioxide and bismuth trioxide having a tin to bismuth metal weight ratio ranging from 1:10 to 100:1.

4,272,355
PROCESS OF BONDING SPUTTERING TARGETS TO TARGET ELECTRODES

Thomas N. Kennedy, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,679
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 7 Claims



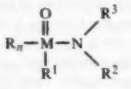
1. A sputtering system for coating substrates comprising:
a vacuum chamber;
means for introducing a gas into said chamber;
a target material for coating said substrates;
a first electrode having a face for mounting said target material thereto;
a second electrode for supporting said substrates positioned adjacent to and in alignment with said first electrode;
means for applying voltages to said electrodes to ionize said gas, so that gas ions energetically bombard said target material; and
a eutectic metal material that is liquid at ambient temperature disposed between said first electrode and said target material for forming a floating bond therebetween.

4,272,356
COAL EXTRACTION PROCESS

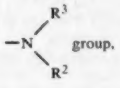
Alfred H. Stiller, 459 Lawnview Cir.; John T. Sears, 200 Jackson Ave., both of Morgantown, W. Va. 26505, and Richard W. Hammack, 9837 Presidential Dr., Apr. 104, Allison Park, Pa. 15101

Filed Apr. 7, 1980, Ser. No. 137,829
Int. Cl.[3] C10G *1/00;* C07C *37/68*
U.S. Cl. 208—8 LE 9 Claims

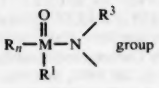
1. A process of substantially extracting the non-fixed carbon content of coal containing fixed carbon and non-fixed carbon therein which comprises the steps of agitating said coal in sub-divided form in a solvent liquid comprising a liquid compound of the general formula:



where
M is a carbon, sulfur, or phosphorus atom,
R^2 and R^3 are each a hydrogen atom or a lower alkyl group,
R and R^1 are each a lower alkyl group, another



a monocyclic aromatic group, or R^1 can be another



or R^1 and R^2 together can represent the atoms necessary to close a heterocyclic ring, and

n=1 where M=phosphorus and is otherwise 0,

at a temperature below the softening temperature of coal until a substantial amount of the non-fixed carbon content of said coal is dissolved in said solvent, and separating the undissolved solid matter of said coal including fixed carbon from said solvent liquid containing non-fixed carbon dissolved therein.

4,272,357

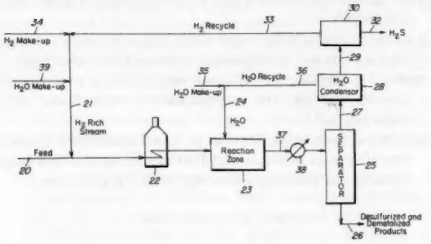
DESULFURIZATION AND DEMETALATION OF HEAVY CHARGE STOCKS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 671,906, Mar. 29, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,317

Int. Cl.³ C10G *45/02, 45/26*

U.S. Cl. 208—89 **11 Claims**



1. In a process for removing sulfur and nickel from a heavy hydrocarbon charge stock which contains from about 10 to about 3000 ppm total metals including nickel and from about 1 to about 10 weight percent sulfur by reaction of the charge stock with hydrogen in the presence of a desulfurization catalyst in a reactor with one or more catalyst beds including a first catalyst bed, the improvement comprising reducing the hydrogen partial pressure and enhancing sulfur and nickel removal by:

(a) mixing said charge stock and a hydrogen-rich stream optionally containing water;

(b) heating the mixture from step (a) to reaction temperature;

(c) injecting said heated mixture and water into said reactor and reacting the resulting heated admixture in said first catalyst bed, said first catalyst bed containing desulfurization catalyst which consists of at least one metallic component selected from the Groups VIB and VIII of the Periodic Table deposited on a refractory inorganic oxide support, under desulfurization conditions, wherein the water to hydrogen molar ratio in the reaction is from about 0.05 to about 0.5;

(d) separating a light gas stream which contains H_2, H_2O, H_2S and light hydrocarbons from the effluent of said reaction zone;

(e) separating the H_2O from said light gas stream leaving a substantially dry light gas stream;

(f) recycling the separated H_2O for injection as in step (c);

(g) separating from H_2S from the dry light gas stream leaving a hydrogen-rich stream;

(h) recycling said hydrogen-rich stream for admixing with said charge stock, and

(i) recovering the desulfurized and demetallized product from the effluent of said reaction zone; said water injected in steps (a) and (c) being at a temperature which is not in excess of the reaction temperature in step (b).

4,272,358

PROCESS FOR REDUCING CARBON MONOXIDE EMISSIONS FROM REGENERATORS OF CATALYTIC CRACKING UNITS

Kenneth Baron, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 5, 1979, Ser. No. 54,984

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **15 Claims**

1. In a process for catalytically cracking hydrocarbons wherein coke-containing cracking catalyst particles are regenerated by combusting said coke in the presence of oxygen and under oxidizing conditions and at elevated temperatures so as to remove the coke from the surfaces of said catalyst particles and thereby regenerate said catalyst particles for cracking hydrocarbons while producing a carbon monoxide-containing flue gas, the improvement comprising reducing the amount of carbon monoxide emitted during the combustion of said coke by utilizing catalyst particles in said catalytic cracking process containing one or more rare earth components incorporated by the method including the steps of:

(a) spraying in the form of a mist an impregnant solution containing one or more dissolved rare earth components onto cracking catalyst particles comprising a crystalline aluminosilicate zeolite having substantial activity for cracking hydrocarbons; and

(b) calcining the resulting composite particles at an elevated temperature so as to convert said one or more rare earth components to the oxides thereof.

4,272,359

METHOD AND APPARATUS FOR RE-PROCESSING WASTE OIL

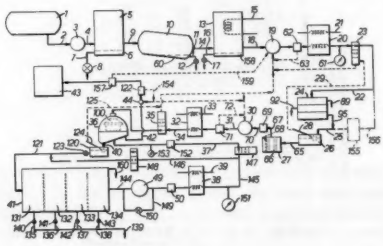
Robert G. F. Owen, Poole, England, assignor to Waste Lubricating Oils Limited, Tunstall, England

Filed Nov. 9, 1979, Ser. No. 92,731

Claims priority, application United Kingdom, Nov. 13, 1978, 44231/78; Jul. 20, 1979, 25384/79

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—179 **15 Claims**



1. A continuous process for re-processing waste oil, possibly containing significant quantities of water and/or solids distributed therein, to produce an oil product having a controlled low water and solids content and suitable for use as a fuel, which method comprises:

(a) providing a solids separation zone for effecting mechanical separation of solids from a liquid;

(b) continuously supplying waste oil to the solids separation zone;

(c) mechanically separating solids from waste oil in the solids separation zone;

(d) recovering from step (c) an intermediate oil product of reduced solids content compared with the waste oil;

(e) continuously feeding intermediate oil product to a separator;
(f) supplying water to the separator;
(g) contacting intermediate oil product of step (d) with water in the separator;
(h) recovering water phase from the separator;
(i) recovering an oil product from the separator;
(j) monitoring the water content of the oil product of step (i); and
(k) controlling the rate of supply of waste oil to the solids separation zone in dependence on the water content of the oil product of step (i), whereby the water content of the oil product of step (i) may be maintained at or below a suitable value permitting use thereof as a fuel.

6. Apparatus for reprocessing waste oil, possibly containing significant quantities of water and/or solids dispersed therein, to produce an oil product having a sufficiently low water and solids content to permit use thereof as a fuel, which apparatus comprises:
(i) solids separation means capable of operation with a continuous liquid feed and including a solids separation zone wherein solids may be separated mechanically from waste oil;
(ii) means for continuously recovering from the solids separation means an intermediate oil product of reduced solids content compared with the starting waste oil;
(iii) separator means for effecting intimate contact between intermediate oil product and water;
(iv) means for continuously supplying intermediate oil product to the separator means;
(v) means for supplying water to the separator means;
(vi) means for recovering from the separator means a water phase;
(vii) means for continuously recovering from the separator means an oil product of sufficiently low water and solids content to permit use thereof as a fuel; and
(viii) means for continuously supplying waste oil to the solids separation means in dependence on the water content of the oil product, whereby the water content of the oil product may be maintained at a predetermined value permitting use thereof as a fuel.

4,272,360

PROCESS FOR BREAKING EMULSIONS IN FLUIDS FROM IN SITU TAR SANDS PRODUCTION

Rene F. Bialek, Calgary, Canada, assignor to Texaco Canada Inc., Calgary, Canada

Filed Mar. 24, 1980, Ser. No. 133,168
Int. Cl.[3] C10G *33/04*
U.S. Cl. 208—188 **8 Claims**

1. A process for recovering oil from an oil-in-water emulsion stabilized by clay and other solids comprising the steps of: subjecting said emulsion to the action of an effective emulsion-breaking amount of non-ionic, water-insoluble polyethylene oxide polymers having a molecular weight in the range of 100,000 to 7,000,000, diluting said emulsion with 30 to 50 volume percent of a hydrocarbon diluent, maintaining the temperature of the resulting mixture between about 150° F. and about 240° F.; thereafter adding to said mixture an effective, clay deposit-inhibiting and -removing amount of an alkali metal hydroxide; allowing the resulting system to remain in the quiescent state for about 2 to about 6 hours, and thereby separating said oil from said system.

4,272,361

METHOD FOR REDUCING THE NITROGEN CONTENT OF SHALE OIL

Leslie E. Compton, Claremont, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 27, 1979, Ser. No. 52,638
Int. Cl.[3] C10G *17/04, 17/10*
U.S. Cl. 208—254 R **11 Claims**

1. A method for reducing the nitrogen content of crude shale oil by removing nitrogen-containing compounds from crude shale oil, comprising the steps of:
extracting the crude shale oil with an immiscible selective solvent for the nitrogen-containing compounds, the selective solvent consisting essentially of water in an amount up to about ten percent by weight and an organic acid selected from the group consisting of formic acid, acetic acid, and mixtures thereof; and
separating the immiscible selective solvent containing nitrogen-containing compounds from the shale oil having a reduced nitrogen content.

4,272,362

PROCESS TO UPGRADE SHALE OIL

Abraham Schneider, Overbrook Hills, Pa.; Elmer J. Hollstein, Wilmington, Del.; Edward J. Janoski, Havertown, and Edward G. Scheibel, Media, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Feb. 1, 1980, Ser. No. 117,610
Int. Cl.[3] C10G *45/02, 67/06*
U.S. Cl. 208—254 H **6 Claims**

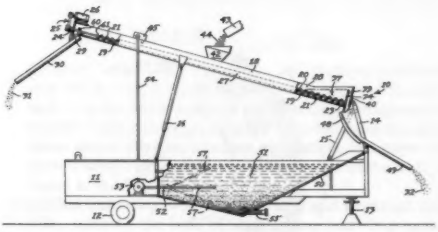
1. In the process of contacting shale oil with hydrogen and a hydrogenation catalyst at effective hydrogenation conditions, the improvement which comprises, prior to the contacting with hydrogen and catalyst, contacting the shale oil with a selective for oxygen compounds to extract said oxygen compounds from the shale oil and separating the solvent-extract containing the extracted compounds from the raffinate, whereby the amount of nitrogen removed per unit of hydrogen consumed during hydrogenation of said raffinate is greater than that which would occur if the oxygen compounds were not removed from the shale oil.

4,272,363

COAL WASHING APPARATUS

Neil H. Cargile, Jr., Box 1067, Nashville, Tenn. 37202

Filed Jul. 11, 1979, Ser. No. 56,685
Int. Cl.[3] B03B *5/28*
U.S. Cl. 209—10 **8 Claims**



1. An apparatus for separating relatively light particles from relatively heavy particles by use of a liquid of lesser specific gravity than any of said particles, comprising:
(a) an elongated inclined trough having an upper end, a lower end, an elongated bottom wall portion and upward projecting side walls,
(b) an elongated auger rotatably mounted in said trough along said bottom wall portion,
(c) feed means for introducing a mixture of said light and heavy particles into said trough above said auger,
(d) liquid dispensing means for introducing liquid into said trough between said upper end and said feed means,
(e) drive means for rotating said auger within said trough in a direction to feed particles caught by the flights of said auger upward toward said upper end,
(f) means for discharging liquid containing said lighter particles from the lower end of said trough,
(g) separating means for separating most of the larger lighter

particles from the liquid slurry containing fine lighter particles,

(h) a liquid reservoir for receiving liquid and said slurry from said separating means,

(i) circulating means for selectively drawing liquid from selectively different levels in said reservoir and distributing said liquid to said liquid dispensing means to provide liquid of different specific gravities in said trough.

4,272,364

FROTHER FOR COAL FLOTATION

Kenneth W. Dixon, Drexel Hill, and Frederick A. Hoffstadt, Coraopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1980, Ser. No. 133,050

Int. Cl.³ B03D *1/02*

U.S. Cl. 209—166 **2 Claims**

1. A method of improving the recovery of coal undergoing a concentration treatment of froth flotation which comprises adding at least 0.01 pounds of 4,4-dimethyl-1-pentanol per ton of dry coal and recovering a concentrate of said coal in said frother.

4,272,365

MAGNETIC SEPARATOR

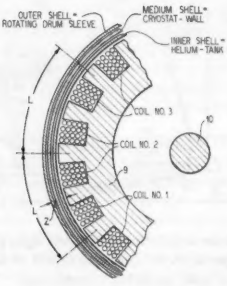
Guenter Ries; Klaus-Peter Juengst; Siegfried Foerster; Franz Graf, all of Karlsruhe; Wolfgang Lehmann, Leopoldshafen; Karl-Heinz Unkelbach, and Gottfried Duren, both of Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 843,737, Oct. 19, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,291

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1976, 2650528

Int. Cl.³ B03C *1/14*

U.S. Cl. 209—223 R **4 Claims**



1. In the magnetic separator of the type which has a separating zone for the separation of magnetic and non-magnetic materials fed into the zone and in which a drum sleeve rotates through the separating zone and rotates about a magnet system for flooding the separating zone with a magnetic field, the improvement wherein:

said magnet system comprises a plurality of super-conducting coils adjacent one another and wound synonymously and adapted to carry current in the same direction, said magnetic coils being of synonymous polarity and producing a high intensity magnetic field which is open in the direction of the separating zone, and soft iron, said coils embedded in said soft iron and operating in an iron-free manner.

4,272,366

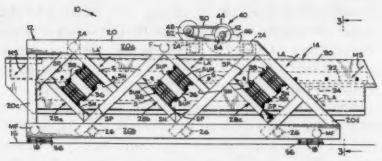
HEAVY DUTY TWO MASS VIBRATORY MACHINE

Arthur L. Dean, and William L. Wine, both of Indiana, Pa., assignors to FMC Corporation, San Jose, Calif.

Filed Aug. 16, 1979, Ser. No. 67,000

Int. Cl.³ B07B *1/42*

U.S. Cl. 209—364 **4 Claims**



1. A vibratory machine for mounting to a stationary support, said vibratory machine having a working member to be driven for oscillation along a predetermined linear path, a frame member with laterally spaced side portions straddling said working member, means to resiliently mount one of said members to said support, means defining flat seating surfaces on the sides of said working member and on the side portions of said frame member, said seating surfaces being normal to said predetermined linear path, elastomer blocks located between opposed seating surfaces on the side portions of the frame member and the working member, respectively, to be compressed therebetween in the direction of movement of the working member along the predetermined linear path, said vibratory machine having a longitudinal centerline that extends within a vertical plane, and an exciter mounted outside said frame member and spaced from the working member, said exciter having a shaft normal to said vertical plane, a motor to rotate said shaft, and on the shaft at least one eccentric weight that upon rotation induces orbital motion of the frame member in planes parallel to said vertical plane, said elastomer blocks converting the orbital motion from the frame member to oscillating linear motion of the working member along the predetermined linear path.

4,272,367

STARTING TECHNIQUES FOR AN ELECTRO-PNEUMATICALLY ACTUATED WET SETTLING MACHINE

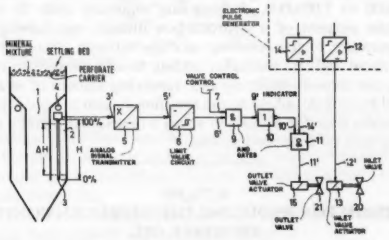
Karl-Heinz Wieffen, Bochum, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,703

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822975

Int. Cl.³ B03B *5/20*

U.S. Cl. 209—500 **9 Claims**



9. Apparatus for starting operation of a wet settling machine which has a bed for supporting a mineral mixture in a settling chamber which contains a separating liquid, an excitation chamber in the settling chamber, an air inlet valve connecting the excitation chamber to a supply of compressed air, and an

air outlet valve for exhausting air from the excitation chamber, said apparatus comprising:

pulse generating means including first and second outputs and operable to provide cyclic pulses alternately at said first and second outputs, said first output connected to the inlet valve to cyclically open the inlet valve and cause a gradual step-wise filling of the excitation chamber with compressed air;

a sensor in the excitation chamber for sensing and providing a level signal indicating the level of the separating liquid;

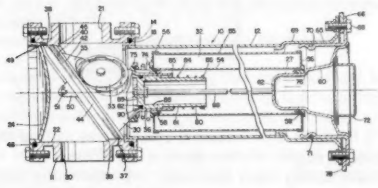
circuit means connected to said sensor and operable to provide a control signal in response to the level signal exceeding a predetermined magnitude; and

gate means connected to said circuit means and to said second output and to the outlet valve for opening the outlet valve in response to the conjunct occurrence of a pulse and a control signal.

4,272,368
FLUID FILTER AND INDICATOR

Brian A. Foord, and Donald C. Leutz, both of Sylvania, Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sep. 4, 1979, Ser. No. 72,382
Int. Cl.³ B01D *35/00*
U.S. Cl. 210—90 **32 Claims**



1. A filter assembly, comprising a housing, a filter element supportive in said housing, a diverter supported in said housing for directing the flow of fluid therein, said diverter being removable from one end of said housing, thereby also to allow removal of said filter element through said one end of said housing, said diverter having support means thereon for supporting said filter element, said diverter comprising a funnel-shape structure having an oblique peripheral edge in supportive engagement with said housing, said oblique edge having a seal thereon to provide fluid tight engagement with said housing, and a bypass valve supported in said diverter for opening and closing a path of fluid communication through said diverter and from one side to the other of said seal on said diverter.

4,272,369
LIQUID TREATMENT APPARATUS

Leonard S. Love, Mississauga, Canada, assignor to Sydlo Inc., Mississauga, Canada

Filed Dec. 13, 1979, Ser. No. 103,310
Int. Cl.³ B01D *21/08*
U.S. Cl. 210—137 **15 Claims**

1. Liquid treatment apparatus comprising:

a clarifier tank for containing a body of liquid extending to a predetermined liquid level in the tank;

an inlet for liquid containing suspended particles;

liquid outlet means disposed generally at said predetermined liquid level and through which clarified liquid can leave the tank;

means in said tank for promoting settling of said particles from said liquid;

a sump in a bottom wall of said tank for receiving settled particles in the form of a sludge;

sludge conveyor means operable to convey settled particles towards said sump;

a thickener tank closely associated with said clarifier tank and having a clarified liquid outlet adjacent an upper end of the tank, a sludge outlet adjacent a lower end of the tank through which settled sludge can be periodically removed from the apparatus, and an inlet intermediate said outlets, said inlet and outlets being below said predetermined liquid level in the clarifier tank;

a conduit extending from said clarifier tank sump to said thickener tank inlet, whereby the head of liquid in the clarifier tank above the sump causes sludge and liquid to continuously flow from said sump into said thickener tank, and causes clarified liquid to flow continuously from said thickener tank liquid outlet;

means in said thickener tank for promoting thickening of particles in liquid in the tank; and,

means coupling said clarified liquid outlet of the thickener tank into one of said inlet and liquid outlet means of the clarifier tank.

2. Liquid treatment apparatus comprising:

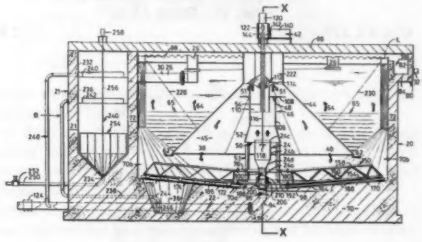
a tank for containing a body of liquid;

a liquid inlet conduit through which liquid containing suspended particles can be delivered to the tank;

liquid outlet means disposed generally at the level of the surface of said body of liquid and through which clarified liquid can leave the tank;

sludge outlet means comprising a sump in a bottom wall of the tank for receiving settled particles and from which said particles can be removed as a sludge;

sludge conveyor means operable to convey settled particles towards said sludge outlet means;



a thickener tank closely associated with the first-mentioned tank and having a clarified liquid outlet adjacent its upper end, a sludge outlet adjacent its lower end through which settled sludge can be periodically removed from the apparatus, and an inlet intermediate said outlets, said inlets and outlets being below said level of the surface of the body of liquid in the first-mentioned tank;

a conduit extending from said sump to said thickener tank inlet, whereby the head of liquid above said sump causes sludge and liquid to continuously flow from said sump into said thickener tank, and causes clarified liquid to flow continuously from said thickener tank liquid outlets; and,

means in said thickener tank for promoting thickening of particles in liquid in the tank;

an inlet member disposed at an inner end of said liquid inlet conduit adjacent said bottom wall of the tank and arranged to direct influent liquid generally vertically upwards in the tank, said inlet member including generally co-axial inner and outer portions each of tubular form extending about a common axis and through which the liquid flows from end to end, said outer portion being of significantly greater cross-sectional area than said inner portion and defining a discharge end of said inlet, whereby some of the energy in liquid flowing through said inlet member is dissipated as the liquid flows from said inner end portion to said outer end portion;

static mixer means disposed in said inner portion of the inlet member;

feed means adapted to permit introduction of chemical addi-

tives into influent liquid immediately upstream of said static mixer;

a generally conical partition member disposed in the tank above said inlet and defining a circulation zone below said member, the remainder of the tank outside said partition member defining a relatively quiescent zone for gravity settling of suspended particles;

a tubular eductor member having open upper and lower ends and disposed in an upright position below said partition member and generally in alignment with said liquid inlet, said eductor member being arranged relative to said inlet so that liquid entering the tank from the inlet flows upwardly in said eductor member and through the open upper end of the member into said circulation zone, and liquid and suspended particles adjacent said open lower end of the eductor member are entrained by said upward flow of liquid, whereby a recirculation of liquid and suspended particles is established below said partition member for promoting flocculation of said particles;

rotary impeller means disposed adjacent said discharge end of said inlet in the path of liquid flowing through the inlet and adapted to control circulation of liquid and suspended particles in said circulation zone.

4,272,370

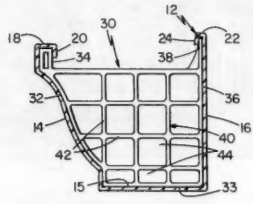
GUTTER STRAINER

Joseph M. Cunning, Cohasset, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Filed Apr. 7, 1980, Ser. No. 137,772

Int. Cl.[3] **B01D** *35/02*

U.S. Cl. 210—162 **2 Claims**



1. For use with a generally U-shaped gutter having a generally curvilineal front wall, a generally straight vertical rear wall and a bottom wall extending therebetween, said front and rear walls each having inwardly and downwardly turned flanges providing open bottom recesses extending continuously along their upper edges

a rigid, generally planar gutter strainer of generally rectangular configuration adapted for vertical mounting within said gutter perpendicular to its said front, rear and bottom walls and extending therebetween throughout the vertical cross sectional area of said gutter

said gutter strainer having

front, rear and bottom edges adapted to abut said front, rear and bottom walls, respectively, of said gutter, and

a central grid portion defining a plurality of openings for impeding passage of debris while allowing passage of water therethrough

said front and rear edges each having an upstanding abutment on their upper ends adapted to be received within said front and rear wall flanges, respectively, of said gutter for mounting and retaining said gutter strainer within said gutter perpendicular to its walls

said central grid portion consisting of a plurality of elements defining said plurality of openings, the dimension of said elements in the direction perpendicular to the plane of said gutter strainer being substantially greater than their dimension in the direction parallel to said plane

wherein said central grid portion is effective to impede passage of debris along said gutter while allowing water to flow therethrough.

4,272,371

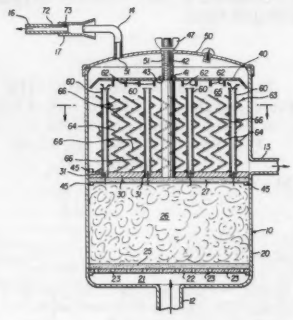
LUBRICATING OIL FILTER-REFINER FOR INTERNAL COMBUSTION ENGINES

John R. Moses, Annapolis, and Adolph Fram, Baltimore, both of Md., assignors to Fram-Israelson Enterprises, Baltimore, Md.

Filed Feb. 21, 1980, Ser. No. 123,119

Int. Cl.[3] **B01D** *35/18*

U.S. Cl. 210—168 **1 Claim**



1. A lubricant filter refiner in combination with an internal combustion engine, the combination comprising:

a casing having upper and lower ends, said casing having an inlet at the lower end thereof for used oil from the engine and an outlet intermediate the upper and lower ends thereof for returning refined oil to the engine;

a retaining plate having holes therein fixed in the casing just below the outlet;

a fibrous filter disposed between the lower end of the casing and the retaining plate;

an evaporation chamber disposed above the fibrous filter and in free communication with the outlet of the casing;

a retaining bolt extending upwardly into the evaporation chamber from the retaining plate;

a splash baffle positioned within the evaporation chamber, and mounted on the retaining bolt in spaced relation with the retaining plate;

a tube extending upwardly from each hole for directing streams of filtered oil against the splash baffle;

spaced plates disposed between the retaining plate and the baffle, the spaced plates being configured with alternating concave and convex surfaces with the concave surfaces having drain holes adjacent the lowest point thereof for draining oil onto an adjacent convex surface, the concave surfaces extending beyond the convex surfaces whereby the lubricant drains off of the convex surfaces onto the adjacent lower concave surface, each of the plates having a center hole therethrough for receiving the retaining bolt and being spaced on the retaining bolt by bushings;

dams disposed on the upper surfaces of the convex and concave plates to slow the flow of oil thereacross and to spread the oil over the surfaces;

vent means positioned in the upper end of the casing above the baffle means for venting volatiles evaporated from the oil while the oil is in the evaporation chamber; and

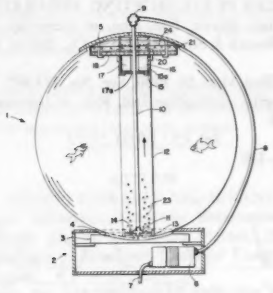
means for connecting the vent means to the air intake of the internal combustion engine to thereby apply a vacuum to the evaporation chamber to enhance evaporation of the volatiles from the oil.

4,272,372

GLOBAL AQUARIUM WITH AERATOR AND PURIFIER

Oscar Fonseca, 3054½ San Bruno Ave., San Francisco, Calif. 94134

Filed Apr. 8, 1980, Ser. No. 138,309
Int. Cl.[3] E04H 3/20
U.S. Cl. 210—169 4 Claims



1. A global aquarium containing a combined aerator-purifier and comprising:
a water tank of generally spherical configuration;
a base for said tank;
a rotatable mounting supporting said tank upon said base;
a combined aerator-purifier of generally hollow cylindrical configuration positioned vertically in the center of said tank;
said aerator-purifier having an open bottom in communication with the interior of said tank and in close proximity to the bottom of said tank;
an air supply tube positioned axially in the center of said aerator-purifier;
said air supply tube extending towards the bottom of said tank and having an opening in close proximity thereto;
a source of compressed air supply to said tube;
a first filter positioned within said aerator-purifier at the top thereof;
said filter having an outlet communicating with the interior of said tank;
a second filter positioned above said first filter;
said second filter communicating with said first filter and the interior of said tank;
an opening in the top of said tank;
a removable cover plate having a central hole and disposed to cover said opening;
said cover plate, said opening and said filters being disposed for easy access, removal for cleaning and replacement of said filters.

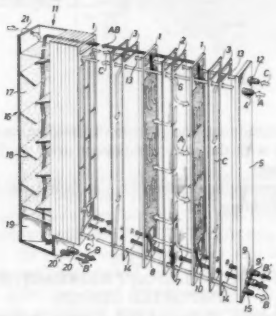
4,272,373

APPARATUS FOR THE TRANSFER OF SUBSTANCES BETWEEN TWO FLUIDS WITH SIMULTANEOUS TEMPERING OF AT LEAST ONE OF THE FLUIDS

Kaj O. Stenberg, Staffanstorp, and Lars J. C. Traven, Lund, both of Sweden, assignors to Gambro AB, Sweden

Filed Jan. 24, 1979, Ser. No. 6,250
Claims priority, application Sweden, Feb. 2, 1978, 7801230
Int. Cl.[3] B01D 31/00; A61M 1/03
U.S. Cl. 210—175 24 Claims

1. Apparatus for the transfer of substances between first and second fluids comprising:
at least one heat permeable membrane having first and second opposing surfaces for the transfer of heat therethrough;
first fluid conducting means for conducting a first fluid through a portion of said apparatus;
a plurality of spacing plates arranged in stacked relationship, said spacing plates including flow channels therein for conducting a second fluid therethrough, at least one of said spacing plates being juxtaposed to said first surface of said at least one heat permeable membrane for conducting a portion of said second fluid through said flow channels thereof along said first surface of said heat permeable membrane;
second fluid introduction means for introducing a second fluid into said flow channels of said spacing plates, said second fluid introduction means including inlet apertures through each of said spacing plates, said inlet apertures being aligned with one another to define a fluid passage through said stack of spacing plates, and said flow channels of said spacing plates being in communication with said inlet apertures in said spacing plates;



transfer means for transferring substances between said first and second fluids;
third fluid conducting means for conducting a third fluid along said second surface of said heat permeable membrane for tempering said portion of said second fluid conducted along said first surface; and
adjustable control means for controlling the introduction of said second fluid to only a predetermined number of spacing plates, said adjustable control means comprising a shut-off element movable to selectively shut off said flow channels of said spacing plates other than said predetermined number of spacing plates so that said second fluid is only introduced into said predetermined number of said spacing plates.

4,272,374

APPARATUS FOR TREATING WASTEWATER

William E. Baker, 6706 Markwood St., Worthington, Ohio 43085

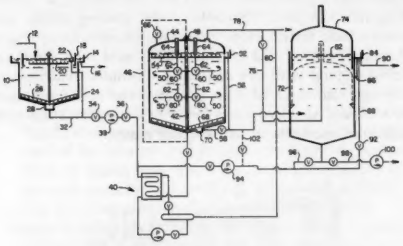
Filed Aug. 3, 1979, Ser. No. 63,435
Int. Cl.[3] C02F 3/28
U.S. Cl. 210—180 6 Claims

1. In the combination of apparatus for treating wastewater including a settling tank and means for delivering wastewater to the tank, the wastewater including solid and liquid components; means for separating the solid from the liquid components; a sludge digester containing sludge; means for moving the separated solid component from the tank to the digester; and means for heating the separated solid component prior to its delivery to the digester,
means for distributing the solid component substantially uniformly throughout the sludge in said digester comprising a rotating manifold mounted concentrically within the digester, the manifold having distribution arms in communication with the manifold and extending outwardly therefrom toward the periphery of the digester and to within about a foot of said periphery,
means for rotating the manifold at a speed not substantially greater than one rpm, said speed being less than a speed

which would cause a homogenous mixture within said digester,

means for activating the rotating means only when sludge is being delivered to the digester,

a holding tank and means for removing sludge from the digester and depositing it in the holding tank,



means for removing sludge from the holding tank and combining it with the solid component prior to the time it is heated, and

means for removing combustible gas from both the digester and the holding tank.

4,272,375

LONG VERTICAL SHAFT BIOREACTOR OF SIMPLIFIED DESIGN

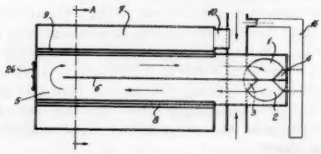
David C. I. Pollock, Richmond Hill, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed Jun. 13, 1980, Ser. No. 159,353

Claims priority, application Canada, Oct. 26, 1979, 338538

Int. Cl.³ C02F *3/22*

U.S. Cl. 210—194 **1 Claim**



1. An improved long vertical shaft bioreactor comprising an enclosed head tank, a long vertical downcomer chamber, a long vertical riser chamber, the said downcomer and riser chambers operatively communicating with each other directly at their lower ends and through the said head tank at their upper ends thus forming a circulatory loop, both the said downcomer chamber and the said riser chamber having means for the injection therein at depth of an oxygen-containing gas, a waste influent conduit operatively opening into said riser chamber at a location above the location of the means for injecting oxygen-containing gas into said riser chamber, a waste effluent conduit operatively discharging from said riser chamber at a location below the location of the means for injecting oxygen-containing gas into said riser chamber, the improvement comprising a foam oxidation vessel surrounding the said head tank in such a manner that the said head tank is immersed in liquid in the foam oxidation vessel, the said head tank and foam oxidation vessel having first and second conduit means therebetween, said first conduit means comprising an inverted J configuration with the short arm of J discharging from the head tank at a position above the normal liquid level in the said head tank, the said second conduit means comprising an inverted J configuration with the long arm of the J discharging from the head tank at a position below the normal liquid level in the said head tank, the said first conduit means being adapted to transfer foam from the surface of the said head tank to the liquid in the said foam oxidation vessel, the said second conduit means being adapted to compensate for increased pressure in the said head tank caused by surges of influent discharge into the said bioreactor.

4,272,376

FILTER PLATE SHIFTING APPARATUS

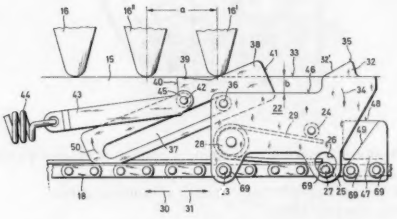
Alfons Schotten, Düren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 133,987

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914448

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—230 **12 Claims**



1. In a filter press having a length, a closed side and an open side and including a plurality of filter plates displaceable parallel to the filter press length towards the open side and in an opposite direction towards the closed side; the filter plates being adapted to assume at said closed side a mutually contacting relationship to form a filter plate stack in which the filter plate closest to the open side is the outermost filter plate; a projection forming part of each filter plate; a filter plate shifting apparatus for individually moving the momentarily outermost filter plate from the closed side towards the open side; the filter plate shifting apparatus including a filter plate drive extending parallel to the filter press length and being movable parallel to the filter press length towards said open and closed sides; the improvement wherein said filter plate shifting apparatus comprises in combination

(a) a carrier means mounted on said filter plate drive for force-transmittingly engaging the projection of the outermost filter plate for shifting it away from said filter plate stack towards said open side when said filter plate drive is moved in the direction of said open side; and

(b) a locking means for pressing the next-to-the-outermost filter plate against said filter plate stack during an initial part of the travel of the outermost filter plate entrained by said carrier means during the motion of said filter plate drive towards said open side; said locking means being mounted on said carrier means for limited displacement relative to said carrier means in a direction parallel to the filter press length and for movement together with said carrier means towards said closed and open sides.

4,272,377

PRODUCTION OF POLYURETHANE EMBEDDING MATERIALS

Klaus Gerlach, Obernau, and Gerhard Wick, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Mar. 26, 1979, Ser. No. 23,948

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813197; Feb. 26, 1979, 2907501; Mar. 28, 1979, 2855243

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **3 Claims**

1. In an apparatus for a selectively effective dialysis wherein

a porous membrane is mounted in a housing to divide it into a dialysate chamber and a retentate chamber, the improvement in mounting said membrane onto the housng which comprises support means partially embedding the membrane and securely adhering it to said housing, said support means consisting essentially of a polyurethane material which is the hardened, cross-linked product obtained by reacting an aromatic diisocyanate in stoichiometric excess with a mixture consisting essentially of castor oil and trimethylolpropane to form a flowable preadduct containing unreacted isocyanate groups, and subsequently hardening said preadduct by intimately admixing therewith as a cross-linking agent

(a) castor oil, or

(b) a mixture of castor oil and trimethylolpropane

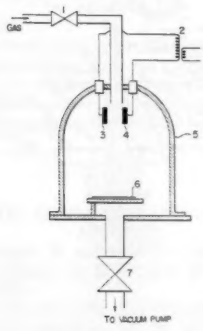
in an amount sufficient to cross-link the prepolymer through a majority of its unreacted isocyanate groups.

4,272,378

SEMIPERMEABLE MEMBRANE

Takezo Sano, Takatsuki; Takatoshi Shimomura, Toyonaka; Masao Sasaki, Osaka, and Ichiki Murase, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 714,239, Aug. 13, 1976, Pat. No. 4,147,745.
This application Jan. 3, 1979, Ser. No. 701
Claims priority, application Japan, Aug. 25, 1975, 50/103329
The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.
Int. Cl.[3] B01D *39/00*
U.S. Cl. 210—500.2 **3 Claims**



1. A heterogeneous membrane of a thickness of 20 to 500μ comprising acrylonitrile copolymers which has a crosslinked dense layer whose thickness is less than 1μ only in the vicinity of the surface thereof and pores of 100 to 1,000 Å in size in the layer close to said cross-linked dense layer, the size of the pores increasing gradually to 1 to 100μ toward the back surface of the membrane.

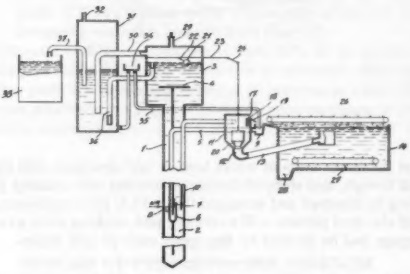
4,272,379

METHOD FOR PROTECTING A BIOREACTOR PRESSURIZED HEAD TANK AGAINST EXTREME SURGES OF INFLUENT WASTE WATER

David C. I. Pollock, Richmond Hill, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed Jun. 13, 1980, Ser. No. 159,349
Claims priority, application Canada, Oct. 26, 1979, 338540
Int. Cl.[3] C02F *3/22*
U.S. Cl. 210—621 **4 Claims**

1. An improved long vertical shaft bioreactor apparatus comprising an enclosed head tank, a downcomer chamber and a riser chamber operatively communicating with each other at their upper and lower extremities, communication at the upper extremities being through the said head tank, means for directing influent waste to said riser, means for removing treated effluent from said riser, means for injecting oxygen-containing gas into the waste within said riser and downcomer, the improvement comprising gas conduit means in the said head tank for venting gas therethrough into an adjacent collection vessel, the end of said gas-venting conduit in said collection vessel being immersed in a predetermined depth of waste liquid in the said collection vessel, liquid conduit means in said head tank for venting liquid therethrough into the said adjacent collec-



tion vessel, the end of said liquid venting conduit being immersed in the said collection vessel liquid at a lower level than the end of said gas-venting conduit, the said collection vessel having overflow conduit means for transferring waste liquid therefrom to the bioreactor influent steam, said overflow conduit means being positioned so as to control the level of liquid in the said collection vesel thereby controlling the pressure exerted by the said liquid upon the gas vented from the said head tank.

4,272,380

SOLVENT FRONT DETECTION METHOD AND MANUFACTURE

Donald W. Jones, San Clemente, Calif., assignor to Analytical Systems, Inc., Laguna Hills, Calif.

Filed Sep. 13, 1979, Ser. No. 75,347
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—658 **6 Claims**

1. In a thin layer chromatographic method employing a chromatogram having a plurality of scored areas adjacent one end of said chromatogram and having inserted into said scored areas at least one disc impregnated with an analyte and at least one disc impregnated with a known organic compound, and eluting said analyte and said known compound with an eluting solvent, whereby said solvent, said analyte and said known organic compound migrate away from said discs, with said solvent defining a solvent front,

the improvement which comprises,

having a solvent elutable lipophilic dye impregnated into at least one of said discs, whereby said lipophilic dye migrates away from said disc said dye traveling with said solvent at said solvent front, wherein said solvent elutable lipophilic dye is present in said disc in sufficient amount to provide at said solvent front easy visual detection of said front.

4,272,381

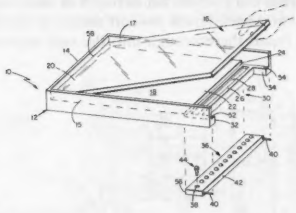
THIN-LAYER CHROMATOGRAPHY SPOTTING

Richard D. Kremer, Keene, N.H., and Michael J. Siebengartner, Del Mar, Calif., assignors to Schleicher & Schuell, Inc., Keene, N.H.

Filed Oct. 22, 1979, Ser. No. 87,074
Int. Cl.[3] B01B *15/08*
U.S. Cl. 210—658 **11 Claims**

1. A device for spotting samples at spaced locations on the adsorbent surface of a TLC plate comprising a base member having an elevated flat TLC plate-supporting portion extend-

ing forwardly from its back and a stepped-down portion at its front containing a solvent trough and a wicking plate containing wick-receiving apertures adapted to be positioned on said stepped-down portion with said apertures over said trough so



that the lower ends of wicks held in said apertures will dip in said trough, said stepped-down portion and said wicking plate being so disposed and arranged that a TLC plate positioned on said elevated portion will overhang said wicking plate so as to engage and be spotted by the upper ends of said wicks.

4,272,382

PROCESS FOR SEPARATING CYCLIC PHOSPHAZENE OLIGOMERS

Yuzuru Ogata, Tokushima, and Yoshifumi Nakacho, Sakai, both of Japan, assignors to Otsuka Chemical Co. Ltd., Osaka, Japan

Filed Nov. 27, 1979, Ser. No. 97,893
Claims priority, application Japan, Apr. 7, 1979, 54-42191
Int. Cl.[3] B01D *15/00*
U.S. Cl. 210—660 **3 Claims**

1. A process for separating cyclic phosphazene oligomers which comprises adding a mineral adsorbent to a mixture containing cyclic phosphazene oligomers and linear phosphazenes, the amount of said mineral adsorbent being 0.5 to 10 parts by weight to 1 part by weight of the linear phosphazenes in the mixture and said mineral adsorbent being at least one mineral selected from the group consisting of vermiculite, sericite, talc, mica, diatomaceous earth, kaolin, bentonite, montmorillonite, acid clay, activated clay, silica, alumina, zeolite, synthetic zeolite and molecular sieves; maintaining said mineral adsorbent in said mixture for a period of from 10 minutes to 10 hours at a temperature of from room temperature to 200° C.; and thereafter removing said mineral adsorbent from said mixture.

4,272,383

METHOD AND APPARATUS FOR EFFECTING SUBSURFACE, CONTROLLED, ACCELERATED CHEMICAL REACTIONS

Jay L. McGrew, 12213 Maxwell Hill Rd., Littleton, Colo. 80120

Continuation of Ser. No. 887,506, Mar. 17, 1978, abandoned.
This application Jan. 3, 1980, Ser. No. 109,417
Int. Cl.[3] C02F *1/74, 11/08*
U.S. Cl. 210—741 **62 Claims**

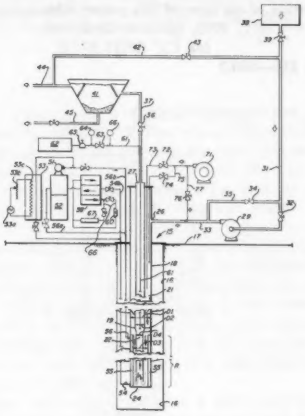
1. In a method for effecting accelerated chemical reactions between at least two reactants, the steps of:

flowing an influent fluid with at least two reactants downwardly through a downgoing flow passage at a selected flow rate to a selected depth below the ground surface in a subterranean hole to form a hydrostatic column of fluid exerting a pressure and provide a temperature sufficient to cause the reactants at said selected depth to react in a reaction at an accelerated reaction rate and pass further down through a reaction zone extending through said downgoing flow passage a selected distance below said selected depth whereby reaction products are produced and the fluid is heated in said reaction zone, flowing the heated fluid and reaction products from said reaction zone back up to substantially ground surface level in an upgoing flow passage in heat exchange relation to the downflowing fluid as an effluent fluid, said reaction being carried out with said downgoing and upgoing flow passages suspended from above in said subterranean hole and in spaced relation to said hole; and

controlling the temperature of said reaction zone by adding heat to said fluid in said reaction zone when the temperature of said fluid in said reaction zone is below a selected temperature and removing heat from said fluid in said reaction zone when said fluid in said reaction zone is above a selected temperature to accomplish a maximum reaction rate with the vapor pressure of the influent fluid at the local temperature being maintained always lower than the local pressure to prevent boiling of said influent fluid.

31. In apparatus for effecting accelerated chemical reactions, the combination comprising:

a reactor including first and second pipe portions defining a downgoing flow passage and an upgoing flow passage in heat exchange relation to the downgoing flow passage, said reactor being suspended from above in a subterranean hole and in spaced relation to said hole, said downgoing



flow passage extending from substantially the ground surface to a depth sufficient to cause a downflowing fluid therein to form a hydrostatic column of fluid to exert a pressure and provide a temperature sufficient to cause two reactants in the fluid at said selected depth to react at an accelerated rate, said downgoing flow passage extending down from said selected depth to form a reaction zone whereby reaction products are produced and said fluid is heated in said reaction zone;

means for pumping an influent fluid with at least two reactants from substantially the ground surface level through said downgoing and upgoing passages whereby an effluent fluid with reaction products is passed from said reactor; and

means for controlling the temperature of said reaction zone by adding heat to said fluid in said reaction zone when the temperature of said fluid in said reaction zone is below a selected temperature and removing heat from said fluid in said reaction zone when said fluid in said reaction zone is above a selected temperature to maintain a substantially maximum reaction rate without boiling of the fluid in said reaction zone.

4,272,384

COMPOSITION FOR PREVENTING A RESIN SYSTEM FROM SETTING UP IN A WELL BORE

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 922,614, Jul. 7, 1978, Pat. No. 4,189,002. This application Sep. 14, 1979, Ser. No. 75,625

Int. Cl.[3] **E21B** *33/138*

U.S. Cl. 252—8.55 R **8 Claims**

1. A composition for preventing a resin system from setting up in a wellbore comprising:

(a) from about 5 to about 50 parts by weight an alkanol primary amine;

(b) from about 95 to about 50 parts by weight an alkylene glycol alkyl ether, (a) and (b) together totalling 100 parts by weight;

(c) from about 0.2 to about 4.5 parts by weight a water insoluble cellulose derivative which is dispersible in the mixture of (a) and (b); and

(d) from about 0.04 to about 0.75 parts by weight a finely divided inert particulate, (c) and (d) functioning to control fluid loss of said composition.

4,272,385

PERFUMED FIREPROOFING COMPOSITION

Micheline M. J. Crête; Pierre G. C. Crête, both of 14, rue de la Chataigneraie, Montmorency (Val d'Oise), and Aurélie Pascod nee Pacescu, 107 Avenue de la Bourdonnais, Paris (Seine), all of France

Filed Feb. 26, 1979, Ser. No. 15,550

Claims priority, application France, Mar. 8, 1978, 78 06704

Int. Cl.[3] **C09K** *3/28*

U.S. Cl. 252—608 **8 Claims**

1. Perfumed fireproofing composition including ammonium sulphamate as fireproofing agent and a wetting agent, comprising in an aqueous medium a perfume selected in the group consisting of terpene, phenyl and benzyl compounds as well as an homogenizing agent for said perfume in the form of a sorbitan ester.

4,272,386

ANTISTATIC, FABRIC-SOFTENING DETERGENT ADDITIVE

Ellsworth R. Draper, Jr., and Kenneth L. Jones, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 961,445, Nov. 16, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,424

Int. Cl.[3] **D06M** *13/46, 15/30;* **C11D** *3/20, 3/26*

U.S. Cl. 252—8.6 **30 Claims**

1. The particulate detergent additive for preventing static buildup on textiles and softening fabrics when applied thereto from a laundry solution, said particulate additive being produced by the at least partial complexing of:

(a) from about 1% to about 90% by weight of an anionic complexing component selected from the group consisting of anionic synthetic surfactants; soaps; nonsurfactant electrolytes selected from the group consisting of alkali metal phosphates, borates, carbonates, silicates, sulfates, and citrates; and mixtures thereof; and

(b) from about 10% to about 99% by weight of particles of an intimate mixture of:

(i) from about 90% to about 20% by weight of a quaternary ammonium compound of formula $[R_1R_2R_3R_4N]^+Y^-$ wherein at least one, but not more than two, of R_1, R_2, R_3, and R_4 is an organic radical containing a group selected from a C_{16}–C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1–C_4 alkyl, C_2–C_4 hydroxy alkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constituting an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methylsulfate, ethylsulfate and phosphate ions, and

(ii) from about 10% to about 80% by weight of a dispersion inhibitor, being a solid organic material having a solubility in water of 50 ppm maximum at 25° C. and a softening point in the range of 75° F. to 250° F., said material being selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of the foregoing alcohols and acids, C_3–C_4 alkylene oxide condensates of any of the foregoing materials and mixtures thereof,

wherein said complex constitutes at least 25% of the surfaces of said particulate additive and wherein substantially all of the additive particles have a size of about 10 microns to about 500 microns, a solubility in water of about 50 ppm maximum at 25° C., and a softening point of from about 75° F. to about 250° F.

4,272,387

PROCESS OF PREPARING MOLYBDENUM COMPLEXES, THE COMPLEXES SO-PRODUCED AND LUBRICANTS CONTAINING SAME

John M. King, San Rafael, and Louis de Vries, Greenbrae, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,699

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.[3] **C10M** *1/54*

U.S. Cl. 252—46.4 **13 Claims**

1. A process for preparing a sulfurized molybdenum-containing composition which comprises (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improvers, or mixtures thereof, to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom; and (2) reacting said complex with a sulfur containing compound, in an amount to provide 0.1 to 4.0 atoms of sulfur per atom of molybdenum, to form a sulfur- and molybdenum-containing composition.

4,272,388

LIGHTWEIGHT INJECTABLE, THIXOTROPIC FOAM INSULATING MATERIAL

Harald Wermelin, Gullmarsvägen 12, Johanneshov, Sweden (S-121 41)

Continuation of Ser. No. 20,643, Mar. 15, 1979, abandoned, which is a continuation of Ser. No. 902,391, May 3, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,654

Claims priority, application Sweden, Nov. 12, 1976, 7612649

Int. Cl.[3] **C04B** *43/02, 43/00*

U.S. Cl. 252—62 **10 Claims**

1. An injectable, thixotropic material for use as insulating material, characterized in that it comprises a mixture of 250–1500 parts by weight of water, 5–70 parts by weight of binder, 1–10 parts by weight anionic or cationic wetting agent, 10–100 parts by weight of mineral wool, 30–300 parts by weight of expanded vermiculite, and optionally 1–10 parts by weight of ammonia; said material having a bulk density from about 0.085 g/cm^3 to about 0.145 g/cm^3.

7. An injectable, thixotropic material for use as insulating material characterized in that it consists essentially of a mixture of 250–1500 parts by weight of water, 5–70 parts by weight of a binder selected from the group consisting of carboxymethyl cellulose, starch and acrylate binders, 1–10 parts by weight of

anionic or cationic wetting agent, 10–100 parts by weight of mineral wool, 30–300 parts by weight of expanded vermiculite, and optionally 1–10 parts by weight of ammonia.

4,272,389

ABSORPTION HEAT PUMP WORK MEDIUM CONSISTING OF A SOLUTION OF A FLUOROCHLOROALKANE IN A SUBSTITUTED AMINO PHOSPHORUS OXIDE

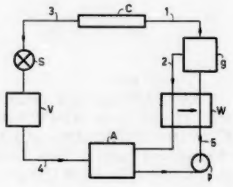
Udo K. P. Biermann, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,073

Claims priority, application Netherlands, Nov. 6, 1978, 7811002

Int. Cl.³ C09K *5/04*

U.S. Cl. 252—69 **3 Claims**



1. A work medium for use in an absorption heat pump, which consists of a solution of a fluorochloroalkane in a solvent consisting of (a) at least one substituted amino phosphorus oxide compound having the general formula:

$$[(R_1R_2)N]3-x(R_3)_xPO$$

and/or (b) at least one substituted amino phosphorus oxide compound having the general formula:

$$[(R_1R_2)N]4-p(R_3)_pP_2O_3$$

wherein R_1, R_2, and R_3 are methyl, ethyl, propyl, butyl, phenyl or cyclohexyl and, in addition, R_3 is methoxy or ethoxy; x is an integer from 0 to 2; and p is an integer from 0 to 3.

4,272,390

HYDRATED $CACL_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS WITH NUCLEATING ADDITIVES

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 2,828, Jan. 12, 1979, abandoned. This application Nov. 2, 1979, Ser. No. 90,704

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **10 Claims**

1. A reversible liquid/solid phase change composition comprising hydrated $CaCl_2$, and as a nucleating additive, one or more of BaI_2, $BaSO_4$, or BaO, added to the composition in an amount effective to suppress supercooling of the hydrated $CaCl_2$ liquid phase.

4,272,391

HYDRATED $MG(NO_3)_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,789

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **17 Claims**

1. A reversible liquid/solid phase change composition comprising hydrated $Mg(NO_3)_2$ and as a nucleating additive, one or more of MgO, $Mg(OH)_2$, $MgCO_3$, CaO, $Ca(OH)_2$, or $CaCO_3$, added to the composition in an amount effective to suppress average supercooling of the $Mg(NO_3)_2$ liquid phase to about 2° C. or less.

4,272,392

HYDRATED $MG(NO_3)_2/MGCL_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,803

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **11 Claims**

1. A reversible liquid/solid phase change composition comprising hydrated $Mg(NO_3)_2/MgCl_2$ and as a nucleating additive, one or more of MgO, $Mg(OH)_2$, or $NaBO_2$, added to the composition in an amount effective to suppress average supercooling of the $Mg(NO_3)_2/MgCl_2$ liquid phase to about 2° C. or less.

4,272,393

GAS GENERATING CLEANING ARTICLE

Gerhard Gergely, Gartengasse 8, 1053 Wien, Austria

Continuation-in-part of Ser. No. 857,843, Dec. 5, 1977, Pat. No. 4,216,104. This application Dec. 27, 1979, Ser. No. 106,337

Claims priority, application Austria, Dec. 3, 1976, 8978/76

Int. Cl.³ C11D *11/00, 7/12;* **B08D** *1/00*

U.S. Cl. 252—91 **16 Claims**

1. In a cleaning material comprising a porous flexible support impregnated with a detergent selected from the group consisting of anionic, cationic and non-ionogenic surfactants, and a water-soluble adhesive, the improvement wherein

said support is also coated or impregnated with (1) at least one gas-generating substance selected from the group consisting of calcium hydride, sodium borohydride, a substance for generating oxygen in water, and a substance for generating CO_2 in water; and, when said gas-generating substance is a said substance for generating oxygen in water or for generating CO_2 in water, said support additionally contains (2) a material for triggering the generation in water of a gas selected from said oxygen and said CO_2.

4,272,394

MACHINE DISHWASHING DETERGENTS CONTAINING LOW-FOAMING NONIONIC SURFACTANTS

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 19, 1979, Ser. No. 95,818

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—99 **18 Claims**

1. A low-foaming homogeneous, nonionic surfactant blend consisting essentially of a blend of

A. at least one conventional polyoxyalkylene-based low-foaming nonionic surfactant and

B. a second nonionic surfactant consisting of a block or heteric/block polyoxyalkylene having a cloud point in a 1 weight percent aqueous solution of about 10° C. to about 30° C. selected from the group consisting of at least one of the polyoxyalkylenes having the formulas:

$$Y[(EO/A)_m(A)_nH]_x \quad \text{I}$$

$$Y[(A)_o(EO)_m(A)_nH]_x \quad \text{II}$$

$$Y[(A)_o(EO/A)_m(A)_nH]_x \quad \text{III}$$

$$Y[(EO/A)_m(EO/A)_nH]_x \quad \text{IV}$$

wherein EO represents ethylene oxide which is present in the polymer in the proportion of about 5 to about 60

percent by weight; Y represents the nucleus of an active hydrogen-containing organic compound having a functionality of x and (1) about 2 to about 6 carbon atoms and at least two reactive hydrogen atoms or (2) about 7 to about 18 carbon atoms and at least one reactive hydrogen atom; A represents a lower alkylene oxide selected from the group consisting of propylene oxide, butylene oxide, tetrahydrofuran or mixtures thereof wherein up to 25 percent by weight of A is reacted directly with said organic compound either alone in formulas II and III or in admixture with ethylene oxide in formulas I and IV and 75 percent by weight or more of A is subsequently reacted to produce said polymer; m, n and o are integers individually selected such that the average total molecular weight of the polymer is about 500 to about 25,000; and wherein said conventional nonionic surfactant is present in the proportion of about 10 to about 90 percent by weight and said second nonionic surfactant is present in the proportion of about 10 to about 90 percent by weight or

C. a second nonionic surfactant characterized as a block polyoxyalkylene having a cloud point of about 10° C. to about 20° C. selected from the group consisting of at least one of the polyoxyalkylenes having the formula

$$Y[(EO)_m(A)_nH]_x \qquad V$$

wherein Y, EO, A, m, n, x, molecular weight, and useful proportions are as defined above.

4,272,395

GERMICIDAL COMPOSITIONS

Robert J. Wright, London, England, assignor to Lever Brothers Company, New York, N.Y.

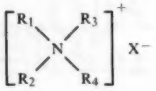
Continuation of Ser. No. 910,550, May 30, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 106,072

Int. Cl.[3] **C11D** *1/62, 3/48*

U.S. Cl. 252—106 **4 Claims**

1. A germicidal liquid detergent composition consisting essentially of water and 0.05 to 20% by weight of an active mixture consisting of:

(a) from 50 to 95 parts by weight of a quaternary ammonium compound having the formula



wherein R_1 and R_2 are alkyl groups each having 9 to 11 carbon atoms; R_3 and R_4 are each an alkyl group of 1 to 3 carbon atoms, a hydroxyalkyl group of 1 to 3 carbon atoms, an alkylether group of 1 to 3 carbon atoms, or a benzyl group; and X^- is Cl^-, Br^-, I^-, NO_3^-, $\frac{1}{2}SO_4^{2-}$, $CH_3SO_4^-$, $C_2H_5SO_4^-$, $\frac{1}{2}HPO_4^{2-}$ or CH_3COO^-;

(b) from 5 to 50 parts by weight of a short chain anionic surfactant having 3 to 8 carbon atoms in the hydrophobic group, selected from the group consisting of organic water soluble, single, double or triple charged sulphonates, sulphates, phosphates and carboxylic acid salts and mixtures thereof; and

(c) from 0 to 20 parts by weight of a nonionic surfactant, selected from the group consisting of mono- or diethanolamides of C_{10}–C_{16} fatty acids; and ethoxylated or propoxylated primary or secondary C_8–C_{16} alkanols containing 1 to 4 ethylene oxide or propylene oxide units per molecule; and mixtures thereof.

4,272,396

ENZYME-CONTAINING DETERGENT COMPOSITION

Kazuaki Fukano, Chiba; Ryuichi Nakagawa, Narashino; Akira Fukasawa, Yachiyo, and Hiroshi Nishio, Chiba, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,158

Claims priority, application Japan, Dec. 5, 1978, 53/150297

Int. Cl.[3] **C11D** *3/386, 7/42*

U.S. Cl. 252—174.12 **9 Claims**

1. An enzyme-containing detergent composition consisting essentially of:

an enzyme having an activity under the conditions of a pH of about 4 to about 13, and a temperature of about 10° to about 80° C.;

an anionic surface active agent containing at least 50% by weight of α-olefin sulfonate having 10 to 20 carbon atoms, said anionic surface active agent being contained within said composition in an amount of 5 to 40% by weight, and;

polyethylene glycol having a weight average molecular weight of 1,000 to 20,000, said polyethylene glycol being contained within said composition in an amount of 0.1 to 10% by weight.

4,272,397

METHOD OF PREPARING FLAKE-LIKE CERAMIC PARTICLE OF ZINC SULFIDE PHOSPHOR

Yoji Fukuda, Neyagawa; Fumio Fukushima, Moriguchi; Tomizo Matsuoka, Neyagawa; Tsuneharu Nitta, Katano, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1979, Ser. No. 44,102

Claims priority, application Japan, Jun. 1, 1978, 53-66383

Int. Cl.[3] **C09K** *11/46;* **C04B** *35/00*

U.S. Cl. 252—301.6 S **11 Claims**

1. A method of preparing flake-like ceramic particles of zinc sulfide phosphor, which comprises the steps of

preparing flake-like particles of basic zinc sulfate crystal doped with activator, by precipitating said basic zinc sulfate particles from an aqueous solution containing zinc sulfate, urea and an activator metal ion component which is at least one activator metal ion selected from the group consisting of copper, silver, gold, aluminum, indium, gallium, rare earth metal and manganese, the atomic ratio of said activator metal ion component in said aqueous solution being 10^{-5} to 10^{-2} with respect to the zinc atom of said zinc sulfate,

sulfurizing said basic zinc sulfate particles in a carbon disulfide atmosphere at a temperature from 400° to 800° C., and

heating the thus sulfurized particles in a hydrogen sulfide atmosphere at a temperature from 800° to 1200° C.

4,272,398

MICROENCAPSULATION PROCESS

Howard Jaffe, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 934,940, Aug. 17, 1978, abandoned. This application Jun. 15, 1979, Ser. No. 49,019

Int. Cl.[3] **B01J** *13/02;* **A01N** *25/28*

U.S. Cl. 252—316 **5 Claims**

2. An encapsulation process for one-phase encapsulation of compounds and mixtures of compounds soluble in volatile organic solvents comprising dissolving said compound and a biodegradable polymer selected from the group consisting of polylactic acid and copolymers of lactic and glycolic acids in a suitable organic solvent, dispersing the solution in an aqueous medium containing an anionic surfactant, and stirring said dispersion until the solvent evaporates, thereby forming a soapy white suspension of said compound in said polymer, filtering, washing, drying and sizing to aggregates of one-phase particles.

4,272,399

CONVERSION OF CARBON-CONTAINING MATERIALS TO SYNTHESIS GAS

George D. Davis, Creve Coeur, Mo.; James C. Hill, Seabrook, Tex.; Talmage D. McMinn, Des Peres, and Charles W. Rooks, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 21, 1979, Ser. No. 77,706
Int. Cl.[3] C01B *2/06, 2/10*
U.S. Cl. 252—373 21 Claims

1. A continuous process for the gasification of carbon-containing materials in a fluidization system comprising a reduction zone and a gasification zone which comprises:

(a) introducing particulate solid oxidant at an elevated temperature into said reduction zone,

(b) introducing a carrier gas selected from the group consisting of steam and carbon dioxide, synthesis gas and mixtures thereof substantially devoid of free oxygen into said reduction zone at such a rate to fluidize oxidant and cause it to move upwardly through said system,

(c) maintaining said reduction zone under conditions such that when said carrier gas is synthesis gas said oxidant is at least partially reduced and said synthesis gas is oxidized to steam and carbon dioxide,

(d) introducing carbon-containing material and steam into said gasification zone whereby said carbon-containing material is injected into and mixed with said upward moving oxidant, steam and carbon dioxide,

(e) maintaining said gasification zone under conditions such that said carbon-containing material, steam and carbon dioxide are endothermically reacted to a mixture of carbon monoxide and hydrogen, and

(f) withdrawing a gaseous effluent comprising carbon monoxide and hydrogen from said gasification zone.

4,272,400

REGENERATION OF SPENT HYDRODESULFURIZATION CATALYSTS EMPLOYING PRESULFIDING TREATMENT AND HETEROPOLY ACIDS

Bernard G. Silbernagel, Scotch Plains; Raam R. Mohan, Berkley Heights, and Gopal H. Singhal, Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 938,798, Sep. 1, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 59,070
Int. Cl.[3] B01J *23/94, 23/92, 21/20;* C10G *23/02*
U.S. Cl. 252—413 25 Claims

1. An improved process for regenerating spent hydrofining catalysts which comprises contacting spent catalyst with a gaseous sulfur-containing reagent having a partial pressure of sulfur of at least about 0.01 atmospheres at a temperature of up to about 650° C., followed by contacting the catalyst with an aqueous solution of a heteropolyacid, impregnating with a water soluble cobalt or nickel salt and calcining at a maximum temperature of about 450° C.

3. The process of claim 1 in which the heteropoly acid contains about 1 to 50 wt. % hydrogen peroxide.

14. The process of claim 1 in which the heteropoly acid is represented by the general formula $H_x(YM_{12}O_{40})$, where Y is at least one element selected from the group consisting of phosphorus, silicon, titanium, germanium, arsenic, zirconium, thorium and cerium, M is at least one element selected from the group consisting of molybdenum, tungsten, niobium and tantalum and x is 3 when Y is pentavalent and 4 and when Y is tetravalent.

4,272,401

REGENERATION OF SPENT HYDRODESULFURIZATION CATALYST WITH HETEROPOLY ACIDS

Raam R. Mohan, Berkley Heights, and Gopal H. Singhal, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 938,796, Sep. 1, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 59,072
Int. Cl.[3] B01J *23/94, 23/92, 21/20;* C10G *23/02*
U.S. Cl. 252—413 19 Claims

1. An improved process for regenerating spent hydrofining catalysts which comprises contacting spent catalyst with an aqueous solution of a heteropoly acid to extract vanadium and nickel, impregnating with a water soluble cobalt or nickel salt and calcining at a maximum temperature of about 450° C.

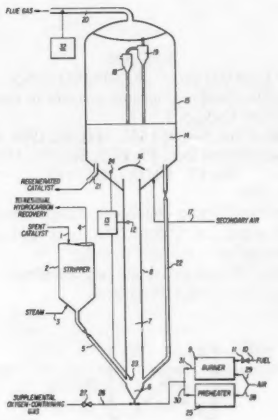
3. The process of claim 1 in which the impregnation and calcination are repeated at least once.

4,272,402

PROCESS FOR REGENERATING FLUIDIZABLE PARTICULATE CRACKING CATALYSTS

Warden W. Mayes, Big Spring, Tex., assignor to Cosden Technology, Inc., Tex.

Filed Jul. 16, 1979, Ser. No. 58,129
Int. Cl.[3] B01J *29/38, 21/20;* C10G *11/18, 11/05*
U.S. Cl. 252—417 44 Claims



1. A process for regenerating spent fluidizable catalyst particles contaminated with carbonaceous deposits comprising the steps of:

introducing spent catalyst particles and hot regenerated catalyst particles directly from a secondary regeneration dense phase zone into a stream of oxygen-containing gas and entraining the catalyst particles in the gas stream to produce a dilute phase catalyst particle stream; the amount of oxygen in said dilute phase stream being sufficient to oxidize substantially all of the carbonaceous deposits on said spent catalyst particles to gaseous combustion products; the temperature of the hot regenerated catalyst particles being greater than the minimum temperature required to initiate rapid oxidation of the carbonaceous deposits on the spent catalyst particles, and the proportion of hot regenerated catalyst introduced into said gas stream being sufficient to raise the temperature of the dilute phase stream to at least the minimum tempera-

ture required to induce rapid oxidation of said carbonaceous deposit;

passing said dilute phase particle stream through an upwardly directed primary regeneration zone while maintaining regeneration conditions suitable for rapid oxidation of said carbonaceous deposit in said primary zone and oxidizing substantially all of the carbonaceous deposits on said spent catalyst particles to gaseous combustion products in said dilute phase stream in the primary zone to regenerate the catalyst particles;

passing said dilute phase stream containing regenerated catalyst particles and gaseous combustion products from the top of said primary zone to the bottom of a dense phase bed of regenerated catalyst particles in a secondary regeneration zone disposed above the primary zone;

introducing a secondary oxygen-containing gas into the lower portion of the dense phase bed in the secondary regeneration zone to assist in maintaining the dense phase bed in a fluidized state and to assure substantially complete combustion of carbon monoxide in the dense phase bed to carbon dioxide;

exhausting the gaseous combustion products from said secondary regeneration zone; said exhausted gaseous products containing between about 1 percent and about 5 percent oxygen and less than 1,500 ppm by volume carbon monoxide; and

withdrawing hot regenerated catalyst particles from said secondary regeneration zone; said regenerated catalyst particles containing less than 0.1 weight percent carbon.

16. A process according to claim **1** further comprising the step of monitoring the temperature of the dilute phase catalyst particle stream in the mixing zone to assure that the minimum temperature of said dilute phase stream is sufficient to induce rapid oxidation of the carbonaceous deposits on the spent catalyst within the primary regeneration zone.

17. A process according to claim **1** further comprising the additional steps of measuring the temperature of the dilute phase catalyst particle stream and adjusting the proportion of at least one member of the group consisting of the spent catalyst particles, the hot regenerated catalyst particles and the oxygen-containing gas stream combined to produce the dilute phase stream to assure that the dilute phase stream reaches the minimum temperature required to induce rapid oxidation of the carbonaceous deposits on the spent catalyst.

4,272,403

BORIC ANHYDRIDE SOLUTIONS AND THEIR USE AS HARDENERS OF RESOLS

Nicolas Meyer, Bully les Mines, and Raymond Foulon, Bruay en Artois, both of France, assignors to Societe Chimiques des Charbonnages SA, Paris La Defense, France

Filed Jun. 15, 1979, Ser. No. 49,009

Claims priority, application France, Jun. 19, 1978, 78 18279

Int. Cl.[3] **B01J** *31/02, 21/02*

U.S. Cl. 252—428 **18 Claims**

1. A concentrated, substantially anhydrous boric anhydride solution which comprises (1) at least 5 percent by weight of boric anhydride; (2) at least one solvent selected from the group consisting of mono alcohols, poly alcohols, trialkylborates and dialkyl acetals of formol; and (3) from 5 to 70 percent by weight, based on the weight of solution, of at least one acid selected from the group consisting of sulfuric acid and sulfonic acids.

4,272,404

SUPPORTED ZIEGLER CATALYSTS AND METHOD THEREFOR

Harry J. Wristers, deceased, Baytown, Tex., and by Joy K. Wristers, sole beneficiary, Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 858,999, Dec. 9, 1977, abandoned, which is a continuation of Ser. No. 659,808, Feb. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 523,354, Nov. 13, 1974, Pat. No. 3,990,993. This application Jul. 10, 1979, Ser. No. 56,175

Int. Cl.[3] **C08F** *4/62, 4/64*

U.S. Cl. 252—429 B **24 Claims**

1. Supported Ziegler transition metal halide catalyst component comprising a plurality of agglomerated particles having a mean particle diameter of from about 10 up to about 1,000 microns, each agglomerated particle comprising a web of polytetrafluoroethylene submicroscopic fibers entangled with supported transition metal halide Ziegler catalyst particles, said support material being a Group IA, IIA, and B or IIIA metal halide.

4,272,405

ZIEGLER TRANSITION METAL HALIDE CATALYSTS AND METHOD THEREFOR

Harry J. Wristers, deceased, late of Baytown, Tex., and by Joy K. Wristers, sole beneficiary, Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham, N.J.

Continuation-in-part of Ser. No. 736,049, Oct. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 523,354, Nov. 13, 1974, Pat. No. 3,990,993. This application Aug. 27, 1979, Ser. No. 69,652

The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.

Int. Cl.[3] **C08F** *4/64*

U.S. Cl. 252—429 B **18 Claims**

1. Ziegler transition metal halide catalyst composition comprising a plurality of agglomerated particles having a means particle diameter of from about 10 up to 1,000 microns, each agglomerated particle comprising a web of polytetrafluoroethylene submicroscopic fibers entangled with a plurality of Ziegler transition metal halide catalyst particles, said Ziegler transition metal halide catalyst having the formula:

$$MX_m \cdot \chi M'R_nX_{3-n} \cdot yR_nM''X_{3-n}$$

where χ ranges between 0 to 3.0; m ranges between 2 to 3.5; n ranges between 0 to 3.0; and y ranges between 0 to 1; and R is an alkyl group having 1 to 8 carbons; M is a transition metal from Groups IIIB, IVB and VB of the Periodic Table; M′ is an element from Groups IA, IIA and IIIA of the Periodic Table; M″ is an element from Groups IA, IIA, IIB and IIIA of the Periodic Table; and X is a halogen from Group VIIA of the Periodic Table.

4,272,406

REFRACTORY METAL OXIDE/SILICA SUPPORTED NICKEL CLUSTER CATALYST

David L. Beach, and Thaddeus P. Kobylinski, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,948

Int. Cl.[3] **B01J** *31/12*

U.S. Cl. 252—430 **40 Claims**

1. A catalyst composition obtained by contacting (a) a refractory metal oxide/silica support wherein the silica content of said support is from about 2 to about 95 weight percent and the metal oxide content of said support is from about 5 to about 98 weight percent with (b) a tris(cyclopentadienyl)trinickel dicarbonyl.

4,272,407

METAL MODIFIED REFRACTORY METAL OXIDE/SILICA SUPPORTED NICKEL CLUSTER CATALYST

David L. Beach, and Thaddeus P. Kobylinski, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,951
Int. Cl.[3] B01J *31/12*
U.S. Cl. 252—430 58 Claims

1. A catalyst composition obtained by contacting (1) a refractory metal oxide/silica support wherein the silica content of said support is from about 2 to about 95 weight percent and the metal oxide content of said support is from about 5 to about 98 weight percent with (2) a solution of a soluble salt whose cationic portion is selected from the group consisting of an alkali metal, an alkaline earth metal and a lanthanide and whose anionic portion is selected from the group consisting of a halide, a nitrate, an acetate and an acetylacetonate and (3) then contacting the metal modified support with a tris(cyclopentadienyl)trinickel dicarbonyl.

4,272,408

STABLE MOLYBDENUM CATALYSTS FOR HIGH CONVERSION OF C^3 AND C^4 OLEFINS TO CORRESPONDING UNSATURATED ALDEHYDES AND ACIDS

Chelliah Daniel, Columbus, Ohio, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 952,177, Oct. 17, 1978, Pat. No. 4,212,767. This application Mar. 24, 1980, Ser. No. 133,045
Int. Cl.[3] B01J *27/14, 27/24, 27/02, 27/06*
U.S. Cl. 252—437 23 Claims

1. The method of preparing heteropoly molybdate catalysts which comprises impregnating a catalytically active calcined precursor material containing molybdenum in the anion stabilized in defect state, with at least one metallic element, then drying and calcining the impregnated material; said precursor material being one prepared by adding to a compound selected from the group consisting of phosphomolybdates, silicomolybdates and arsenomolybdates, an aqueous chloride ion and a compound selected from the group consisting of phosphotungstates, silicotungstates, vanadium arsenate, silicoarsenate, phosphovandate, silicovandate, the corresponding acids and mixtures thereof.

4,272,409

ALUMINOSILICATE SOLS AND POWDERS

Horacio E. Bergna, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 861,397, Dec. 16, 1977, Pat. No. 4,217,240, which is a continuation-in-part of Ser. No. 809,362, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 719,717, Sep. 2, 1976, abandoned. This application Oct. 12, 1979, Ser. No. 84,403
Claims priority, application Canada, Aug. 31, 1977, 285851
Int. Cl.[3] B01J *21/12, 29/06*
U.S. Cl. 252—455 R 33 Claims

1. A porous powder composition comprising porous aggregates of spheroidal particles of from 3 to 90 nanometers which particles are nonporous to nitrogen and contain:

(a) a core of silica, aluminosilicate or one or more refractory metal oxides selected from alumina, zirconia, titania, thoria and rare earth oxides;

(b) a coating around said core of at least 0.5 nanometer in depth of an amorphous hydrous aluminosilicate compound having a molar ratio of Si:Al of from 1:1 to 19:1 and comprising one or more cations selected from sodium, potassium, ammonium, hydrogen and Groups I to VIII metals selected from Cs, Li, Mg, Ca, Sr, Ba, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, La, Ce, rare earth metals, Hf, Ta, W, Re, Os, Ir, Pt, Au, Sn, Cd, Bi and Sb; and

(c) a surface layer over said coating of 0 to 15% by weight of a metal or metal oxide selected from Cs, Li, Mg, Ca, Sr, Ba, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, La, Ce, rare earth metals, Hf, Ta, W, Re, Os, Ir, Pt, Au, Sn, Cd, Bi and Sb; said powder composition having a specific surface area of 30 to 750 m^2/g, a bulk density of 0.5 g/cc or more and substantially uniform size pore diameters of from 20 Å to 250 Å, with pore diameters of 20 Å to 45 Å having a uniformity such that at least 90% of the pore volume is made up of pores of from 0.6 D to 1.4 D and pore diameters of 45 Å to 250 Å having a uniformity such that at least 80% of the pore volume is made up of pores of from 0.6 D to 1.4 D, where D is the median pore diameter.

19. The porous powder composition of claim 1 uniformly mixed with a crystalline aluminosilicate zeolite such that the mixture is 5 to 50% by weight crystalline aluminosilicate zeolite and 95 to 50% by weight of said powder.

4,272,410

CATALYST FOR PREPARATION OF OXYGENATES FROM CARBON MONOXIDE AND HYDROGEN

Yun-Yang Huang, Troy, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 38,470, May 14, 1979, Pat. No. 4,210,597. This application Oct. 31, 1979, Ser. No. 89,978
Int. Cl.[3] B01J *21/04, 23/58, 23/64*
U.S. Cl. 252—465 4 Claims

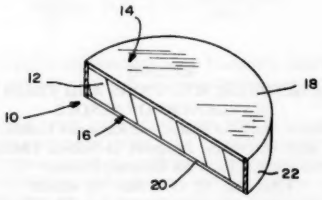
1. A catalyst especially adapted for converting a gaseous mixture of carbon monoxide and hydrogen to oxygenated compounds consisting essentially of rhodium, tungsten and an alkali metal supported on alumina.

4,272,411

METAL OXIDE VARISTOR AND METHOD

Theodore O. Sokoly, Racine, and John Niedzialkowski, Milwaukee, both of Wis., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Mar. 8, 1979, Ser. No. 18,626
Int. Cl.[3] H01B *1/04*
U.S. Cl. 252—516 11 Claims



1. A sintered body for a varistor having the following composition by weight:

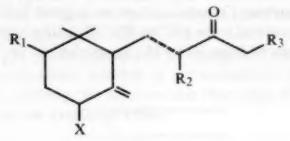
92.7–93.69 molar percent zinc oxide
2.50 molar percent bismuth trioxide
0.40 molar percent manganese oxide
1.10 molar percent cobalt tetraoxide
0.80 molar percent nickel oxide 1.50 molar percent antimony trioxide, and
0.01–1.00 molar percent silicon carbide

4,272,412
HALOGEN CONTAINING IONONE DERIVATIVES AND COMPOSITIONS CONTAINING SAME

Brian J. Willis, Bergenfield; Philip A. Christenson, Midland Park, both of N.J., and Robert Mack, Valley Stream, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Mar. 13, 1980, Ser. No. 129,898
Int. Cl.³ C07C *49/11, 49/21;* A61K *7/46*
U.S. Cl. 252—522 R **6 Claims**

1. A compound defined by the generic structure



wherein the dashed line may be either a carbon-carbon single bond or a carbon-carbon double bond; R_1, R_2 and R_3 are each the same or different and each represents hydrogen or methyl; and X is halogen.

4. A fragrance composition which comprises an amount of the compound of claim **1** effective to impart fragrance thereto in combination with conventional fragrance ingredients.

4,272,413
DIALKYLUREA TEXTILE SOFTENING AND ANTISTATIC AGENTS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company

Filed Nov. 26, 1979, Ser. No. 97,579
Int. Cl.³ C11D *1/50;* D06M *13/40;* C07C *127/15*
U.S. Cl. 252—525 **18 Claims**

1. Dialkyl urea antistatic and softening agents substituted on both nitrogen atoms and having the formula:

RNHCONHR′

wherein R is a short alkyl group of 1–6 carbons, and R′ is a secondary aliphatic hydrocarbon chain of 8–22 carbons.

4,272,414
CHEMICAL RETARDANTS FOR FOREST FIRES

H. Lawrence Vandersall, Upland, Calif., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 909,903, May 26, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,566
Int. Cl.³ C09D *5/18;* C09K *3/28*
U.S. Cl. 252—602 **21 Claims**

10. A fire retardant composition which comprises an aqueous solution of:

(a) from about 5 to about 40 percent by weight of ammonium sulfate;

(b) from 0 to about 20 percent by weight of an ammonium salt selected from the group consisting of monoammonium orthophosphate; diammonium orthophosphate; monoammonium pyrophosphate; diammonium pyrophosphate; triammonium pyrophosphate; tetraammonium pyrophosphate; ammonium, substituted ammonium, amide and melamine polyphosphates; ammonium-alkali metal mixed salts of ortho-, pyro- and polyphosphates; ammonium-alkaline earth metal mixed salts of ortho-, pyro- and polyphosphates; and mixtures thereof; and

(c) from about 0.005 to about 5.0 percent by weight of a polygalactomannan derivative selected from the group consisting of carboxyalkyl ethers of polygalactomannans and hydroxyalkyl ethers of polygalactomannans.

4,272,415
COMPOSITIONS INCLUDING MERCAPTOORGANOPOLYSILOXANES AND METAL SALTS OF CARBOXYLIC ACIDS

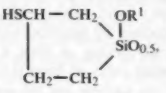
Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,302
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—18 S **5 Claims**

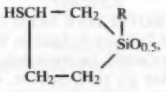
1. A composition of matter consisting essentially of a material prepared by mixing

(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, hydroxydimethylsiloxane units, trimethylsiloxane units, units of the formula

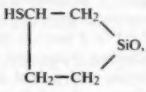
units of the formula



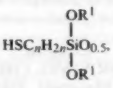
units of the formula



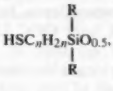
units of the formula



units of the formula



units of the formula



wherein: R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radical: R^1 is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive; and n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur-containing siloxane units per molecule, but not more than 10 mole percent sulfur-containing units based upon the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) a filler in an amount equal to from about 0 to about 200 parts by weight per 100 parts by weight of (A); and

(C) a carboxylic acid salt of a metal where the metal is selected from the group consisting of iron, cobalt, copper, manganese and nickel in an amount equal to from about 0.01 to about 5 parts by weight per 100 parts of the weight of (A).

4,272,416

FILM-FORMING RESIN FOR USE IN ANTI-CORROSIVE AND CAN-COATING COMPOSITIONS

Beppino Passalenti, Lissone; Gino Giuliani, Parabiago, and Osvaldo Fiorani, Sesto S. Giovanni, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Nov. 19, 1979, Ser. No. 95,285

Claims priority, application Italy, Nov. 21, 1978, 29966 A/78

Int. Cl.[3] **C08L** *91/00*

U.S. Cl. 260—18 EP **13 Claims**

1. A resinous substance suitable for use as film-forming component in anti-corrosive and can-coating paint and varnish compositions, which consists of the product obtained by reacting a normally solid polyepoxide with cashew nut oil in such amounts as to ensure equivalence, or substantial equivalence between the phenolic hydroxyl groups of said cashew nut oil and the epoxy groups of said polyepoxide, and modifying the resulting reaction product by reaction with saturated and/or unsaturated fatty acids having at least 8 carbon atoms per molecule, using a molar ratio of from 0.1:1 to 0.8:1 between said fatty acids and the cashew nut oil used for the reaction with the polyepoxide.

4,272,417

STABLE PROTECTIVE SEED COATING

Martin B. Barke, and Rebecca A. Luebke, both of Minneapolis, Minn., assignors to Cargill, Incorporated, Minnetonka, Minn.

Filed May 22, 1979, Ser. No. 41,321

Int. Cl.[3] **A01C** *1/06;* **A09D** *3/64;* **C09D** *5/02;* **A09D** *5/14*

U.S. Cl. 260—22 R **12 Claims**

1. A stable composition for coating seeds comprising a non-phytotoxic binding agent in an amount of at least about 2.5 percent, an effective amount of an active ingredient, a coloring agent in an amount of 0.1 to 3 percent, and a liquid medium, said liquid medium including water and a polyol to stabilize said composition, wherein said polyol is selected from the group consisting of ethylene glycol, hexylene glycol, propylene glycol, diethylene glycol, glycerol, methyl cellosolve, and butyl cellosolve, said polyol comprising between about 5 percent and about 48 percent by weight of said composition.

4,272,418

STABILIZER FOR VINYL CHLORIDE RESIN

Hiroshi Isa, Yachiyo; Masatoshi Takahashi, Fujisawa, and Isamu Kadoya, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

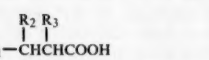
Filed Jan. 27, 1975, Ser. No. 544,230

Claims priority, application Japan, Feb. 9, 1974, 49/16664

Int. Cl.[3] **C08K** *5/09;* **C07C** *53/128, 51/14*

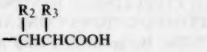
U.S. Cl. 260—23 XA **6 Claims**

1. A stabilizer for polyvinyl chloride resin, which consists of the calcium or barium salt of fatty acid having the formula:



wherein R_1 is alkyl, one of R_2 and R_3 is methyl or ethyl and the other of R_2 and R_3 is hydrogen, and the total number of carbon atoms of R_1, R_2 and R_3 is in the range of from 18 to 26.

4. Polyvinyl chloride resin molding composition having blended therein a stabilizer in an amount effective to impart thermal stability to said composition, said stabilizer being the calcium salt, the barium salt or a mixture of the calcium and barium salts of fatty acid having the formula



wherein R_1 is alkyl, one of R_2 and R_3 is methyl or ethyl and the other of R_2 and R_3 is hydrogen, and the total number of carbon atoms of R_1, R_2 and R_3 is in the range of from 18 to 26.

5. A polyvinyl chloride resin molding composition according to claim 4, in which said fatty acid has been prepared by reacting an olefin, carbon monoxide and water, in the presence of a cobalt carbonyl compound and an organic base, at a reaction temperature of from 100° to 200° C., under a carbon monoxide pressure of from 10 to 150 atmospheres.

4,272,419

TREATMENT OF STYRENE-BUTADIENE RUBBER

Carlton G. Force, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 962,301, Nov. 20, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,569

Int. Cl.[3] **C08L** *9/06, 93/00*

U.S. Cl. 260—27 BB **16 Claims**

1. A styrene-butadiene copolymer rubber composition comprising styrene-butadiene copolymer rubber and as a tackifier from 1% to 25% based on dry weight of the rubber of a tall oil pitch which has been at least partially saponified.

4,272,420

AQUEOUS POLYESTER EMULSIONS AND THE USE THEREOF FOR THE PRODUCTION OF PARTICULARLY THIN-LAYER COATINGS

Walter Frank; Otto Bendszus; Hans-Joachim Freier, and Hans-Joachim Traenckner, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,576

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905666

Int. Cl.[3] **C08K** *5/01*

U.S. Cl. 260—28 R **10 Claims**

1. A monomer-free aqueous emulsion of

(A) from 10 to 90% by weight of a mixture of α,β-ethylenically unsaturated polyesters;

(B) from 9.95 to 83% by weight of water;

(C) from 0.05 to 2% by weight of a sealing agent and

(D) 0 to 5% by weight of a thickener; the percentages by weight being based in each case on the sum of (A), (B), (C) and (D), and said polyester mixture (A) containing:

(a) from 50 to 95% by weight, based on the sum of (a) and (b), of at least one α,β-ethylenically unsaturated polyester which, per 100 g of polyester (a), contains from 0.2 to 0.8 moles of β,γ-ethylenically unsaturated ether groups but is free of co-condensed polyalkylene glycol residues having a molecular weight of 250 to 2000 and

(b) from 5 to 50% by weight based on the sum of (a) and (b) of at least one α,β-ethylenically unsaturated polyester of which 25 to 90% by weight based on (b) consists of co-condensed glycol residues having a molecular weight of from 250 to 2000 and which contains, per 100 g of polyester (b), 0.02 to 0.2 mole of saturated aliphatic terminal groups which are residues of at least one member selected from the group consisting of monocarboxylic acids and monofunctional alcohols.

4,272,421
METHOD FOR PREPARING WATER-SOLUBLE LACQUER

Hitoshi Yamazaki; Hiroshi Ito; Toshiyuki Takeda, all of Kamakura, and Junzo Enomoto, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,314
Int. Cl.³ C08L *71/02*
U.S. Cl. 260—29.2 EP **2 Claims**

1. A method for preparing a water soluble lacquer for use in forming a liquid phosphor suspension which comprises dissolving polyethylene oxide having a molecular weight of at least 2,500,000 in water to form a polyethylene oxide aqueous solution, adding acid to said solution in such a manner as to adjust the pH of the solution in the range of from 3.0 to 5.0, heating the resultant solution at a temperature of not lower than 95° C., cooling the solution and removing the remaining acid with an ion exchange resin.

4,272,422
AQUEOUS MICROHYDROGEL DISPERSIONS, PROCESSES FOR PRODUCING THE SAME, AND PROCESSES FOR PRODUCING MICROHYDROGELS

Koji Tanaka, Okayama, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan

Filed Jul. 10, 1979, Ser. No. 56,314
Claims priority, application Japan, Aug. 16, 1978, 53-100323
Int. Cl.³ C08L *33/02*
U.S. Cl. 260—29.6 AN **20 Claims**

1. A process for producing an aqueous microhydrogel dispersion characterized by causing an alkaline substance to act on an acrylonitrile polymer containing acid groups and a crossliked structure and having a particle diameter not larger than 1μ or on an aqueous emulsion of said polymer so as to introduce at least 0.1 m mol/g salt-type carboxyl groups represented by —COOX wherein X is an alkali metal or ammonium ion, thereby to form an aqueous dispersion in which a hydrogel having a degree of water-swellability not lower than 3 cc/g and a particle diameter not larger than 1μ in absolute dryness is stably dispersed in an aqueous medium.

4,272,423
TEXTILE PRINTING PASTE

Norimasa Hirano, and Yuzuru Yamauchi, both of Uji, Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,153
Claims priority, application Japan, Jun. 5, 1979, 54-69489; Jul. 8, 1979, 54-72108; Jul. 18, 1979, 54-90287
Int. Cl.³ C08L *33/04*
U.S. Cl. 260—29.6 TA **13 Claims**

1. A textile printing paste for pigment printing, consisting essentially of a stock emulsion and an aqueous pigment color, which stock emulsion is a mixture in the form of an o/w emulsion consisting essentially of

(A) an alkali-thickenable emulsion of a copolymer having a weight average molecular weight of at least 500,000 and being derived from

(i) 2.5 to 40% by weight of an ethylencially unsaturated carboxylic acid containing 3 to 6 carbon atoms,

(ii) 1 to 10% by weight of an ethylenically unsaturated monomer having one crosslinkable functional group selected from the class consisting of the group —CH$_2$OR wherein R is a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, a glycidyl group and a hydroxyl group,

(iii) 0.1 to 3% by weight of a monomer having an ethylenic linkage and at least one sulfonate salt group, and

(iv) 47 to 96.5% by weight of another monomer having an ethylenic linkage,

(B) a basic compound, and

(C) a hydrophobic organic solvent,

said mixture containing 3 to 12% by weight of the copolymer and not more than 2% by weight of surface active agents.

4,272,424
PROCESS FOR THE PREPARATION OF VINYL CHLORIDE-BASED RESINS

Hajime Kitamura; Kazuhiko Kurimoto, and Koji Azuma, all of Ibaragi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,380
Claims priority, application Japan, Oct. 20, 1978, 53-129278
Int. Cl.³ C08L *33/10, 27/06;* C08K *3/00;* C08L *9/08*
U.S. Cl. 260—29.6 RW **4 Claims**

1. A process for the preparation of a vinyl chloride based resin modified with a polymer latex by suspension polymerization of vinyl chloride monomer or a mixture of monomers mainly composed of vinyl choride monomer in an aqueous medium in the presence of a water-soluble suspending agent and a polymerization initiator soluble in the monomer phase which comprises introducing the latex of the modifier polymer in an amount from about 0.1 to 50% by weight as solids based on the amount of monomers originally in the mixture into the polymerization mixture at a moment when the conversion of the monomer or monomers to polymer is in the range from 30% to 95%, introducing an inorganic fine powder having an average particle size not exceeding 50 μm into the polymerization mixture at the same time as or before the introduction of the latex of the modifier polymer and continuing the polymerization reaction to completion where the monomer conversion is larger by at least 2% than at the moment of the introduction of the latex of the modifier polymer.

4,272,425
TREATING DISPERSIONS OF ACRYLONITRILE POLYMERS

James R. Miller, Richfield, and Edward J. Leeson, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 26, 1979, Ser. No. 88,439
Int. Cl.³ C08F *6/16, 236/12*
U.S. Cl. 260—29.7 PT **5 Claims**

1. A method for reducing the acrylonitrile content of aqueous dispersions of copolymers of butadiene-1,3 and acrylonitrile comprising adding to said dispersion after the butadiene-1,3 and acrylonitrile have copolymerized to greater than 90% conversion to copolymer an amount of butadiene-1,3 greater than the amount of free acrylonitrile and a catalyst comprising an organic peroxide and a reducing heavy metal compound in amount based on the peroxy compound of at least about 0.1 part based on the total monomer and polymer present.

4,272,426
PREPARATION OF LATICES

Alan A. J. Feast, Eastleigh, England, assignor to The International Synthetic Rubber Company Ltd., South Hampton, England

Filed Feb. 29, 1980, Ser. No. 126,017
Claims priority, application United Kingdom, Mar. 7, 1979, 07999/79
Int. Cl.³ C08L *47/00*
U.S. Cl. 260—29.7 H **21 Claims**

1. A process for the preparation of a carboxylated latex from monomeric components (a), (b), (c) and (d) in which (a) is at least one conjugated diene, (b) is at least one monovinyl non carboxylic comonomer, (c) is at least one ethylenically unsaturated carboxylic acid and (d) is at least one N-alkylolamide of an alpha beta-ethylenically unsaturated carboxylic acid wherein the polymerisation reaction is carried out in two or more stages in which all of monomeric components (a), (b) and (c) together with only a proportion or none at all of monomeric component (d) are polymerised to a conversion of 50% to 80% in the first stage, the reaction is continued in the second

stage to which is supplied the balance or all of monomeric component (d) and the carboxylated latex is recovered from the final stage.

4,272,427

PLASTICIZED PVC

Boyce I. D. Davis, Cheadle, and Brian G. Clubley, Wilmslow, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 13, 1979, Ser. No. 94,305

Claims priority, application United Kingdom, Nov. 15, 1978, 44635/78

Int. Cl.[3] **C08K** *5/49*

U.S. Cl. 260—30.6 R **5 Claims**

1. A composition comprising a vinyl chloride polymer or copolymer and

(a) from 1 to 150 parts by weight, per 100 parts by weight of the vinyl chloride polymer or copolymer, of a triaryl phosphate ester, and

(b) from 1 to 120 parts by weight per 100 parts by weight of vinyl chloride polymer or copolymer of a mixture of magnesium carbonate and zinc carbonate in which the ratio of magnesium carbonate to zinc carbonate is from 10:1 to 1:10.

4,272,428

PLASTICIZED VINYL CHLORIDE POLYMER

Christian Lindner, Cologne; Carlhans Süling; Herbert Bartl, both of Odenthal; Dietrich Hardt, and Karola Brudermanns, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,546

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823161

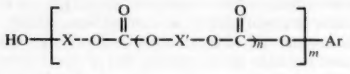
Int. Cl.[3] **C08K** *5/04;* **C08L** *69/00*

U.S. Cl. 260—31.2 R **4 Claims**

1. A thermoplastic molding composition comprising a mixture of

(a) 10 to 95% by weight of a vinyl chloride polymer and

(b) 90 to 5% by weight of an adipate/carbonate mixed ester of the formula



wherein

Ar is aryl of 6 to 18 carbon atoms;

X and X′ are independently polyester moieties of adipic acid and polyhydric alcohol with the polyester molecular weight being 800 to 3500;

n is an integer from 0 to 10 and

m is an integer from 22 to 100.

4,272,429

THERMALLY STABLE, FLAME-RETARDANT POLYMERS AND SELECTED OLIGOMERS USEFUL THEREIN

Richard H. Jones, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 35,097, May 1, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,849

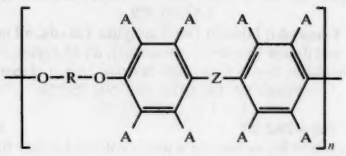
Int. Cl.[3] **C08K** *7/14, 5/06*

U.S. Cl. 260—37 N **5 Claims**

1. A flame-retardant blend consisting of

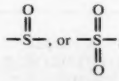
(a) a thermoplastic, film-forming polyamide

(b) between about 1–30 percent by weight based on blend of an oligomer represented by the formula



wherein R is a divalent arylene group of between about 6–15 carbon atoms; each A is independently hydrogen or bromine with the proviso that at least 6 of the A groups are bromine; n is a cardinal number of between about 2 and about 20;

and Z is 0, S,



(c) and between about 1–15 percent by weight based on blend of a metal oxide synergist that does not substantially degrade the polymer.

4. The blend of claim **1** which contains a filler or a reinforcing agent.

4,272,430

ADDITIVE FOR INORGANIC BINDERS

Stefan Pieh, Linz, and Hubert Czepel, Dornach, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jun. 8, 1979, Ser. No. 46,778

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826447

Int. Cl.[3] **C08L** *61/20*

U.S. Cl. 260—39 R **5 Claims**

1. A mixture containing an inorganic binder from the group consisting of cement, magnesia cement and calcium sulfate, and having improved flowability and increased early strength, which comprises water, the inorganic binder and 0.01 to 20%, relative to the inorganic binder, of a water-soluble salt of a mixed condensate of urea, melamine, an aromatic aminosulfonic acid and formaldehyde, in which the molar ratio of the aromatic aminosulfonic acid to the total amount of urea and melamine is from 0.2 to 1.0:1 and the molar ratio of melamine to urea is from 0.75:0.25 to 0.30:0.70.

4,272,431

PROCESS FOR PREPARING A POLYMER MIXTURE

Herman A. J. Schepers, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands, 4

Continuation of Ser. No. 835,893, Sep. 23, 1977, abandoned. This application Oct. 30, 1979, Ser. No. 89,358

Claims priority, application Netherlands, Sep. 25, 1976, 7610672; Sep. 25, 1976, 7610674

Int. Cl.[3] **C08K** *3/04;* **C08L** *53/00*

U.S. Cl. 260—42.46 **33 Claims**

1. A thermoplastic, elastomeric composition based on a polyalkene rubber and a polyalkene plastic, and consisting essentially of an intimate mixture of

(a) 25–85% by weight of a substantially amorphous ethene-α-alkene copolymer, having an X-ray crystallinity of below 4% by weight, a differential scanning (d. sc.) crystallization temperature of +0° to about 50° C. and a tensile strength in unvulcanized condition of at least 10 kg/cm^2, and

(b) 15–75% by weight of an at least partially crystalline block copolymer of propene and ethene having an ethene content of between about 1 and 25% by weight and an X-ray crystallinity of at least 25% by weight.

15. The composition of claim 1, further including 1–100 parts of carbon black incorporated per 100 parts of polymer mixture.

4,272,432

CLAUDOGENIC-INTERCEPTIVE NONAPEPTIDE

John P. Yardley, and Alan Corbin, both of King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,302
Int. Cl.[3] C07C *103/52*
U.S. Cl. 260—112.5 R 3 Claims

1. A compound of the formula:

(R)-L-tryptophyl-(R^2)-L-seryl-(R^3)-L-tyrosyl-D-alanyl-(R^5)

in which

R is —H or an α-amino protecting group selected from the group consisting of tert-butyloxycarbonyl, trityl, phthalyl, tosyl, allyloxycarbonyl, cyclopentyloxycarbonyl, tert-amyloxycarbonyl, benzyloxycarbonyl, o-nitrobenzyloxycarbonyl and p-nitrobenzyloxycarbonyl;

R^2 and R^3 are independently —H or a hydroxyl protecting group selected from the group consisting of acetyl, tosyl, benzoyl, tert-butyl, trityl, benzyl and benzyloxycarbonyl; and,

R^5 is hydrazino or a carboxyl protecting group selected from the group consisting of an alkyl ester containing from 1 to 6 carbon atoms in the alcohol moiety, benzyl ester or a substituted benzyl ester in which said substitution is in ortho and/or para position and is represented by lower alkyl, lower alkoxy or nitro group.

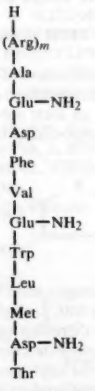
4,272,433

METHOD FOR PREPARING ANTIGEN AND ANTIBODY

Tomoyoshi Nishino, Tokushima, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 876,799, Feb. 10, 1978, abandoned. This application Sep. 20, 1979, Ser. No. 77,221
Claims priority, application Japan, Feb. 10, 1977, 52-13919
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.
Int. Cl.[3] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 13 Claims

1. A peptide-protein complex antigen consisting essentially of a peptide of the formula (I)



(I)

wherein m is 0 or 1, as a hapten, linked by a dialdehyde of the formula (II)

$$OHC—(CH_2)_n—CHO$$

wherein n is an integer of 1 to 5, to a protein carrier selected from the group consisting of equine serum albumin, bovine serum albumin, rabbit serum albumin, human serum albumin, equine serum globulin, bovine serum globulin, rabbit serum globulin and human serum globulin conventionally used to prepare antigen.

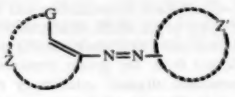
4,272,434

NONDIFFUSIBLE COMPOUNDS HAVING A RELEASABLE AZO DYE MOIETY

Brian D. Baigrie; Joseph Bailey; Linda G. Johnston, and Miroslav V. Mijovic, all of Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 927,189, Jul. 24, 1978, Pat. No. 4,183,753, which is a division of Ser. No. 822,188, Aug. 5, 1977, Pat. No. 4,142,891. This application Mar. 23, 1979, Ser. No. 23,430
Claims priority, application United Kingdom, Sep. 10, 1976, 37653/76
Int. Cl.[3] C09B *29/36, 29/42, 29/44*
U.S. Cl. 260—156 21 Claims

1. A nondiffusible compound having a releasable azo dye moiety, said compound having the following formula:



wherein:

Z represents the atoms necessary to complete an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms;

Z' is an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms, said Z' having, in a position adjacent to the point of attachment to the azo linkage, either (a) a nitrogen atom in said ring of said nucleus which acts as a chelating site, or (b) a carbon atom in said ring of said nucleus having directly attached thereto a nitrogen atom which acts as a chelating site;

G is a metal chelating group, a salt thereof or a hydrolyzable precursor thereof;

said compound also containing a ballasted carrier moiety which will release said diffusible azo dye under alkaline conditions.

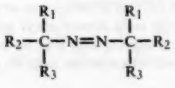
4,272,435

PROCESS FOR THE PREPARATION OF AZO COMPOUNDS FROM AMINO COMPOUNDS IN THE PRESENCE OF A PHASE TRANSFER CATALYST

Teruo Matsuda; Shigeo Wake, both of Niihama, and Tetsuya Shiozaki, Saijo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 25, 1978, Ser. No. 945,504
Claims priority, application Japan, Oct. 12, 1977, 52-122725; Dec. 19, 1977, 52-153363; Apr. 18, 1978, 53-46351
Int. Cl.[3] C07C *107/00, 107/02, 107/04*
U.S. Cl. 260—192 18 Claims

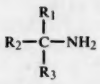
1. A process for producing an azo compound of the formula (I),



(I)

wherein each of R_1 and R_2 is selected from the group consisting of (1) C_1–C_8 aliphatic hydrocarbon unsubstituted or substituted with carboxyl, hydroxyl or alkoxy of the formula —OR_4 in which R_4 is C_1–C_4 aliphatic hydrocarbon, (2) C_3–C_8 alicyc-

lic hydrocarbon, (3) C_6–C_{10} aromatic hydrocarbon and (4) C_4–C_{12} alicyclic hydrocarbon formed by combining R_1 and R_2 together with the adjacent carbon atom, and R_3 is selected from the group consisting of nitrile, ester of the formula —$COOR_4$ in which R_4 is C_1–C_4 aliphatic hydrocarbon, carboxylate of the formula —COOM in which M is an alkali metal or alkaline earth metal, and carboxyamido, by reacting an amino compound of the formula (II), having an ammonia content of 2.0% by weight or less,



(II)

wherein R_1, R_2 and R_3 are as defined above, with a metal hypohalide of the formula (III),

$$M(OX)_n \quad \text{(III)}$$

wherein M is an alkali metal or alkaline earth metal, X is chlorine, bromine or iodine and n is the valence of the metal M, or with an alkyl hypohalite of the formula (IV),

$$R_5OX \quad \text{(IV)}$$

wherein R_5 is C_1–C_6 aliphatic hydrocarbon and X is as defined above, in the presence of an alkali, characterized in that said reaction is carried out using as a phase transfer catalyst at least one member selected from the group consisting of organic quaternary ammoniums, organic quaternary phosphoniums and macrocyclic polyethers in a heterogeneous medium comprising water and at least one organic solvent selected from the group consisting of nitriles and esters.

4,272,436

COMPOSITION AND METHOD OF IMPROVING THE GREEN STRENGTH OF UNVULCANIZED RECLAIMED RUBBER

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

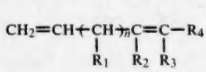
Division of Ser. No. 779,382, Mar. 21, 1977, Pat. No. 4,198,324. This application May 24, 1979, Ser. No. 42,190

Int. Cl.[3] **C08J** *11/04;* **C08L** *45/00*

U.S. Cl. 260—2.3 **2 Claims**

2. An elastomer blend compostition having improved green strength, comprising:

a blend of a semi-crystalline butene polymer having a number average molecular weight of from about 30,000 to about 500,000 with an elastomer, the amount of said butene polymer ranging from about 2 to about 25 parts per 100 parts by weight of said elastomer, said butene polymer selected from the group consisting of polybutene and interpolymers made from 1-butene monomer and at least one monomer selected from the group consisting of alpha-olefins having 2 through 16 carbon atoms, non-conjugated dienes having the general formula:



where R_1, R_2 and R_3 is a hydrogen, a lower alkyl group containing from one to four carbon atoms, or an aryl group; where R_4 may be an aryl group or a lower alkyl group containing from one to nine carbon atoms, and n is an integer having a value of from 1 to 6, and wherein the said R_1's in the

may be similar or dissimilar; and non-conjugated alpha, omega-polyenes having from 6 to 36 carbon atoms which may or may not contain internal unsaturation, wherein butene in said interpolymers comprises from 99.9 to 65 mole percent of the total monomers, and

said elastomer being reclaimed rubber.

4,272,437

ANTIBACTERIAL AGENTS, AND 4-THIO AZETIDINONE INTERMEDIATES

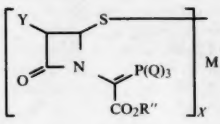
Marcel Menard, Candiac, and Alain Martel, Delson, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 968,663, Dec. 18, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,888

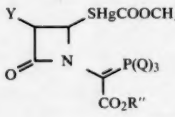
Int. Cl.[3] **C07D** *205/08, 403/12, 513/04;* **A61K** *31/425*

U.S. Cl. 260—239 A **5 Claims**

1. An intermediate selected from the group consisting of a compound of the formula



wherein Y is hydrogen, Q is phenyl or (lower)alkyl, R″ is an easily removable ester protecting group, X is 1 or 2 and M is Cu(I I), Pb(II) or Hg(II) when X is 2 or Ag(I) when X is 1; and a compound of the formula



in which Y, Q and R″ are as defined above.

4,272,438

MANUFACTURE OF SEMI-SYNTHETIC PENICILLIN ANTIBIOTICS

Marco Croci, and Gennaro Maruzzelli, both of Milan, Italy, assignors to Glaxo Group Limited, London, England

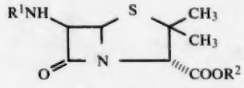
Filed Sep. 28, 1979, Ser. No. 79,939

Claims priority, application United Kingdom, Oct. 6, 1978, 39599/78

Int. Cl.[3] **C07D** *499/12*

U.S. Cl. 260—239.1 **19 Claims**

1. In a process for the manufacture of a 6β-acylamino penicillanic acid antibiotic product in which 6β-amino penicillanic acid (6-APA) is reacted in an inert solvent with a silylating agent to form a silylated compound of formula (I)



(I)

wherein R^1 represents a hydrogen atom or a tri(C_{1-6}alkyl)silyl group and R^2 represents a tri(C_{1-6}alkyl)silyl group and the compound of formula (I) is thereafter contacted with an acyl chloride or protected acyl chloride corresponding to the desired 6β-acylamino group, the silyl groups are cleaved with water and the desired antibiotic product is recovered, silylation being effected using a tri(C_{1-6}alkyl(silyl urea or tri(C_{1-6}alkyl)-halosilane and the compound of formula (I) produced being reacted without intermediate isolation with the acyl chloride

or protected acyl chloride, the improvement which comprises acylating in the presence of a hydrogen halide acceptor mixture comprising in excess of 0.15 up to about 3.00 moles of urea per mole of 6-APA, in excess of 0.15 up to about 1.30 moles of bis-tri(C_{1-6}alkyl)silyl urea per mole of 6-APA, and in excess of 0.25 up to about 3.30 moles of tri(C_{1-6}alkyl)-ammonium halide per mole of 6-APA.

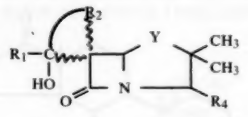
4,272,439

6-(SUBSTITUTED-HYDROXYMETHYLENE PENAMS)

Ashit K. Ganguly, Upper Montclair; Viyyoor M. Girijavallabhan, East Orange; Patricia Cavender, Lawrenceville; Olga Sarre, Verona, and Stuart W. McCombie, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 2, 1978, Ser. No. 911,858
Int. Cl.[3] C07D *277/60*
U.S. Cl. 260—245.2 R **4 Claims**

1. A compound of the formula:



wherein Y is sulfur or sulfoxide; R_1 together with the carbon atom to which it is attached, is the carbon residue of an aldehyde or ketone which contains no functional group that would preferentially react with a zinc halo-β-lactam intermediate over the oxo functionality; R_2 is a group of the formula

$$-(CH_2)_m-(X)_p-(CH_2)_n-$$

wherein
X is O or S;
m is 0–3;
p is 0–1;
n is 0–3; and
m+p+n is 3–5; and
R_4 is cyano, or —$COOR_{11}$ wherein R_{11} is a readily removable ester-forming moiety, and the pharmaceutically acceptable acid addition salts thereof.

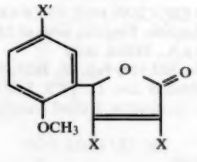
4,272,440

INTERMEDIATES FOR PREPARING HYDROXYPHENYLPYRIDAZINONES

Angelina J. Duggan, Lawrenceville, N.J., and Robert L. Webb, West Chester, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 880,928, Feb. 24, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,732
Int. Cl.[3] C07D *307/58*
U.S. Cl. 260—343.6 **2 Claims**

1. A compound of the formula:



in which X' is bromo or chloro and both variables denoted by X are either bromo or chloro.

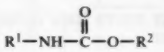
4,272,441

PREPARATION OF CARBAMATES

Robert E. Keay, Stockton, N.J.; Edward F. Orwoll, Fort Littleton, Pa., and John A. Price, Kingston, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 13, 1980, Ser. No. 129,936
Int. Cl.[3] C07D *307/86*
U.S. Cl. 260—346.73 **10 Claims**

1. In a process for making compounds of the formula



wherein
R^1 is alkyl, alkyl substituted by halogen, alkyl substituted by alkoxy, aryl, aryl substituted by halogen, aryl substituted by alkyl, aryl substituted by alkoxy, aralkyl, aralkyl substituted by alkoxy, cycloalkyl, cycloalkyl substituted by halogen, cycloalkyl substituted by alkyl or cycloalkyl substituted by alkoxy, and
R^2 is an aromatic group, an aromatic group substituted by alkyl, an aromatic group substituted by halogen, an aromatic group substituted by alkoxy, a heteroaromatic group, a heteroaromatic group substituted by alkyl, a heteroaromatic group substituted by halogen, or a heteroaromatic group substituted by alkoxy, by the reaction of phosgene with a phenol of the formula

R^2—OH

and further by reaction of a primary amine of the formula

R^1—NH_2

by reacting all three of the above-mentioned reactants in a common water-immiscible organic solvent in the same reaction vessel at the same time in the presence of an acid binding agent, the improvement which comprises omitting the acid binding agent and gradually adding the phosgene and primary amine concurrently, but as separate streams, to the stirred R^2—OH and solvent.

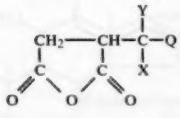
4,272,442

CERTAIN TRICARBOXYLIC ACID DERIVATIVES

Eddie N. Gutierrez, Fort Lee, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 970,827, Dec. 18, 1978, Pat. No. 4,226,781. This application Dec. 17, 1979, Ser. No. 104,637
Int. Cl.[3] C07D *307/60*
U.S. Cl. 260—346.74 **4 Claims**

1. A polyfunctional compound of the formula



wherein
(A) X is COOR and R is methyl or ethyl;
(B) Y is CN or $COCH_3$, and
(C) Q is H.

4,272,443

SILVER-CONTAINING CARRIER CATALYSTS, PROCESS FOR THEIR MANUFACTURE, AND PROCESS FOR THE MANUFACTURE OF ETHYLENE OXIDE USING THESE CATALYSTS

Eckart Titzenthaler, Ludwigshafen, and Roland Schwen, Friedelsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,305

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2844402

Int. Cl.[3] C07D *301/10*; B01J *21/08, 23/04, 23/50*

U.S. Cl. 260—348.34 4 Claims

1. A carrier catalyst comprising a carrier material and a catalyst, the active mass of which is 20 to 90 percent by weight of silver, 0.005 to 5 percent by weight of lithium; and 3 to 70 percent by weight of SiO_2 in free form or in the form of silicates.

4,272,444

DEHYDROFORMYLATION OF STEROIDAL ALDEHYDES

Charles A. McCombs, and Charles H. Foster, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1980, Ser. No. 178,043

Int. Cl.[3] C07J *1/00*

U.S. Cl. 260—397.3 12 Claims

1. A process for dehydroformylating a steroidal aldehyde of the group consisting of dinorcholan-22-aldehydes and dinorcholen-22-aldehydes to the corresponding 17(20)-pregnenes or 20-pregnenes which comprises heating the aldehyde at a temperature of at least 160° C. in the presence of a noble metal catalyst.

4,272,445

PROCESS FOR PREPARING ACTIVE COMPOUNDS

Paul Smith, Hoddesdon, and Frederick Cassidy, Harlow, both of England, assignors to Beecham Group Limited, England

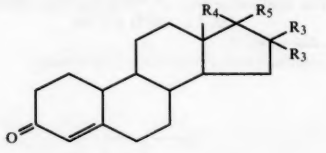
Filed May 19, 1978, Ser. No. 907,778

Claims priority, application United Kingdom, May 25, 1977, 21961/77

Int. Cl.[3] C07J *1/00*

U.S. Cl. 260—397.4 7 Claims

1. The process for the preparation of a 16,16-disubstituted androst-4-en-3 one of the formula:



wherein

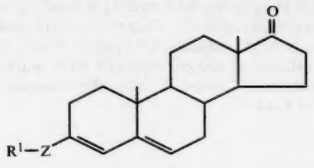
R_4 and R_5 are together oxo or

R_4 is hydroxy, and

R_5 is hydrogen or alkyl of 1 to 5 carbon atoms, and

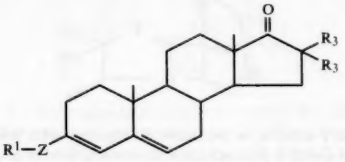
each R_3 is alkyl of 1 to 5 carbon atoms, which comprises

(a) converting androst-4-ene-3,17-dione to an androsta-3,5(6)-dien-17-one of the formula:



wherein Z is oxygen or sulfur and R^1 is alkyl of 1 to 6 carbon atoms, phenyl, phenylalkyl of 7 to 9 carbon atoms or cycloalkyl of 5 or 6 carbon atoms by treatment with a reagent operable to effect selective enol ether or enol thioether formation,

(b) treating said androsta-3,5(6)-dien-17-one with R_3Y wherein R_3 is as defined above and Y is a halide, tosylate, mesylate or azide in the presence of a strong base of low nucleophilicity to yield a 16,16-disubstituted androsta-3,5(6)-dien-17-one of the formula:



wherein R^1, Z and R_3 are as defined above,

(c)

(i) when R_4 and R_5 are to be other than oxo and R_5 is to be hydrogen, reducing said 16,16-disubstituted androsta-3,5(6)-dien-17-one to produce the corresponding 16,16-disubstituted androsta-3,5(6)-dien-17-ol, or

(ii) when R_4 and R_5 are to be other than oxo and R_4 is to be alkyl, alkylating said 16,16-di-substituted androsta-3,5(6)-dien-17-one to produce the corresponding 16,16-disubstituted 17-alkylandrosta-3,5(6)-dien-17-ol, and

(d) hydrolyzing said 16,16 disubstituted androsta-3,5(6)-dien-17-one, said 16,16-disubstituted androsta-3,5(6)-dien-17-ol or said 16,16-disubstituted 17-alkylandrosta-3,5(6)-dien-17-ol with aqueous acid to yield said 16,16-disubstituted androst-4-en-3-one.

4,272,446

STEROIDS AND PROCESS FOR PREPARING THE SAME

Mario Riva, and Luciano Toscano, both of Milan, Italy, assignors to Pierrel S.p.A., Milan, Italy

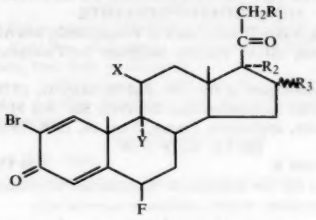
Division of Ser. No. 553,124, Feb. 26, 1975, Pat. No. 4,226,862. This application Jan. 12, 1979, Ser. No. 3,029

Claims priority, application United Kingdom, Feb. 27, 1974, 8928/74

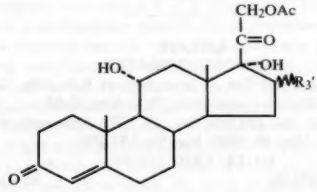
Int. Cl.[3] C07J *5/00*

U.S. Cl. 260—397.45 9 Claims

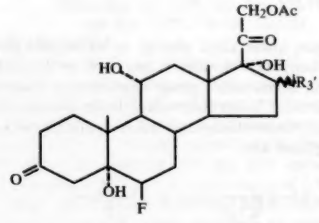
1. In a process for preparing 2-bromo-6β-fluoro pregna-1,4-dien-3,20-dione compounds having the formula A


(A)

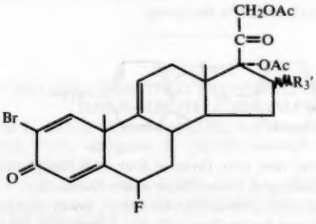
wherein X represents Br, Cl, or OQ; Y represents Br, Cl, F or H; R_1 represents OQ; R_2 represents OQ; R_3 represents H, CH_3 or α-OQ; and the groups Q, which may be the same or different from each other, represent H or acyl or the two OQ groups in 16- and 17-position or the two OQ groups in 17- and 21-position together form a cyclic ketal, cyclic acetal or cyclic alkyl orthorester, wherein at least one group OQ is a carboxylic or inorganic acid radical, by ketalizing a compound of formula I


(I)

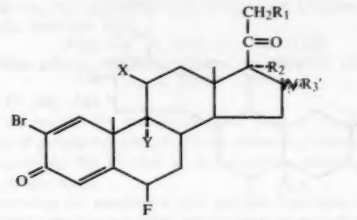
wherein R_3' is hydrogen or methyl and Ac is CH_3CO under migration of the double bond into 5,6-position, epoxidizing the double bond and reacting the resulting 5α6β-epoxide with hydro-fluoric acid to form a fluoro hydrin compound of formula IV


(IV)

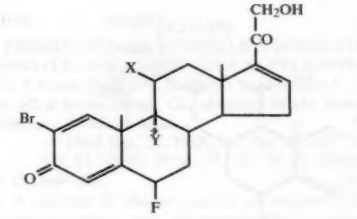
wherein R_3' and Ac are as defined above converting the compound of (IV) into a compound of formula VIII


(VIII)

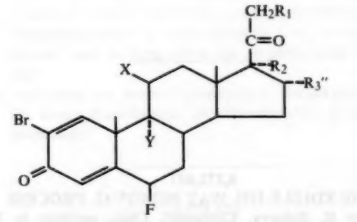
wherein R_3' and Ac are as defined above introducing the substituents X and Y in 9- and 11-position of the compound of formula VIII and converting the OAc groups in 17- and 21-position into a group OQ to form a compound of formula A'


(A')

wherein X, Y, R_1, R_2 and R_3' are as defined above, and dehydrating a compound of formula A' wherein R_3' is hydrogen and X, R_1 and R_2 each are hydroxy to form a compound of formula

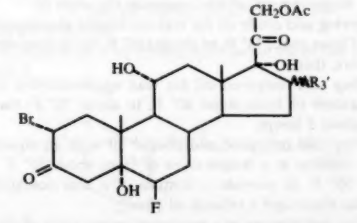

(XIc)

oxidizing the compound of formula XIc into the corresponding 16, 17 dihydroxy compound and converting the 16, 17 and 21 hydroxy groups therein into a group OQ to obtain a compound of formula A''


(A'')

wherein X, Y, R_1 and R_2 are as defined above and R_3'' is OQ, wherein the improvement comprises the conversion of a compound of formula IV into a compound of formula VIII comprising the steps of

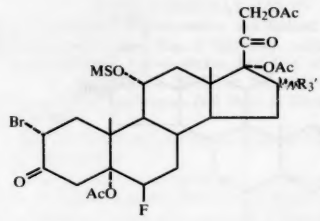
(a) monobrominating the compound of formula IV into a corresponding 2α-bromo compound of the formula V


(V)

wherein R_3' and Ac are as defined above,

(b) mesylating the 11-hydroxy group of the compound of

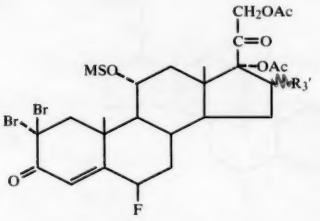
formula V and acetylating the resulting 11-mesylate into a compound of formula VII



(VII)

wherein R_3' and Ac are as defined above and MS represents CH_3SO_2—,

(c) brominating the compound of formula VII under dehydroacetylation into a compound of formula VII bis



(VII bis)

wherein R_3' Ac and MS are as defined above, and

(d) dehydrobrominating the compound (VIII bis) under dehydromesylation into the compound of formula VIII.

4,272,447

CRUDE EDIBLE OIL WAX REMOVAL PROCESS

Christopher R. Beharry, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 26, 1979, Ser. No. 106,959
Int. Cl.[3] C11B *3/06*
U.S. Cl. 260—425 **16 Claims**

1. In a process for refining and dewaxing crude vegetable oil wherein said crude oil is treated with an aqueous alkali solution to provide a wax containing aqueous phase and a refined oil phase, said oil phase then being separated from said aqueous phase, the improvement which comprises the steps of:

(a) tempering said crude oil for wax nucleation at a temperature of from about 75° F. to about 120° F. for at least about 24 hours; then

(b) cooling said tempered oil for wax agglomeration to a temperature of from about 40° F. to about 70° F. for at least about 5 hours;

(c) refining said tempered and cooled oil with an aqueous alkali solution at a temperature of from about 75° F. to about 95° F. to provide a mixture of a wax containing aqueous phase and a refined oil phase;

(d) heating said mixture to a maximum temperature of about 120° F., and separating said oil phase from said aqueous phase.

4,272,448

PROCESS FOR THE MANUFACTURE OF ALUMINUM MONOETHYL PHOSPHITE

Andre Bernard; Andre Disdier, both of Villeurbanne, and Michel Royer, Lyons, all of France, assignors to Philagro, Lyons, France

Continuation-in-part of Ser. No. 22,510, Mar. 21, 1979, abandoned. This application Jun. 25, 1979, Ser. No. 51,753
Claims priority, application France, Mar. 24, 1978, 78 09965
Int. Cl.[3] C07F *5/06*
U.S. Cl. 260—448 R **21 Claims**

1. A process for the continuous manufacture of aluminium monoethyl-phosphite, which consists in successively:

(a) preparing a mixture of phosphite compounds, containing at least 70 mol % of diethyl phosphite,

(b) saponifying and neutralising this mixture with an inorganic base at a temperature of 20° to 85° C., whilst keeping the pH at 4.0 to 8.5, and then

(c) reacting the residual aqueous solution of alkali metal monoethyl-phosphite, which is continuously withdrawn from the preceding operation, with an approximately stoichiometric amount of a water-soluble aluminium salt, at a temperature of 70° to 95° C. and at a pH of about 3.0 to 4.5, and continuously withdrawing the precipitate of aluminium monoethyl-phosphite.

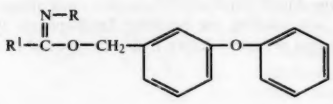
4,272,449

PHENOXY IMIDATES

Gustave K. Kohn, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 102,050, Dec. 10, 1979. This application May 19, 1980, Ser. No. 151,490
Int. Cl.[3] C07C *119/20*
U.S. Cl. 260—453.99 **15 Claims**

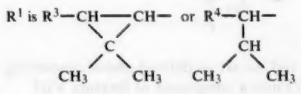
1. A compound of the following formula:



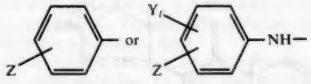
(A)

wherein,

R is hydrogen, lower alkyl, phenyl, or substituted phenyl wherein phenyl is substituted at one, two, or three of the ring carbon atoms with a group selected from lower alkoxy, lower alkyl, lower fluoroalkyl, lower alkenyl, lower haloalkenyl, lower alkenyloxy, halogen, nitro, cyano, and lower alkylthio; and



where R^3 is lower alkyl, lower haloalkyl, lower alkenyl or lower haloalkenyl; and $R^4$is the group



in which t is zero, one, two, three or four; Y is independently selected from hydrogen, lower alkyl, lower fluoroalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, halogen, and lower fluoroalkylthio; and Z is independently selected from the values of Y, cycloalkyl, and lower fluoroalkoxy.

4,272,450

(3-NITRO-4-METHYL)-PHENYL CHLOROFORMATE AND ITS PREPARATION

Horst Scheuermann, and Dieter Schneider, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,059

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920386

Int. Cl.[3] C07C *69/96*

U.S. Cl. 260—463 1 Claim

1. (3-Nitro-4-methyl)-phenyl chloroformate.

4,272,451

ACETONITRILE PROCESS WITH IMPROVED CATALYSTS

James W. Gambell, and Steven R. Auvil, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1979, Ser. No. 106,776

Int. Cl.[3] C07C *121/18, 120/00*

U.S. Cl. 260—465.1 17 Claims

1. In a process of preparing acetonitrile by reaction of carbon monoxide, hydrogen and ammonia in molar ratio of approximately 1:0.1–10:0.5–4, at a temperature over about 450° C. over a molybdenum catalyst, the improvement which comprises utilizing catalyst consisting essentially of (a) unsupported molybdates of manganese, calcium, magnesium or strontium; or (b) a high surface area refractory support and molybdenum with additional additive which interacts therewith selected from compounds of manganese, strontium, magnesium and calcium, with such additive being present in molar ratio to molybdenum in the range of about 0.25:1 to about 4:1; and from zero up to about 2% of alkali-metal compound.

4,272,452

PROCESS FOR PREPARING ACETONITRILE

Steven R. Auvil, St. Louis, and Charles R. Penquite, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1979, Ser. No. 106,775

Int. Cl.[3] C07C *120/00, 121/18*

U.S. Cl. 260—465.1 15 Claims

1. In a process for producing acetonitrile by reaction of carbon monoxide, ammonia and hydrogen at elevated temperature in excess of 350° C. and pressures in excess of 100 psi gauge in contact with a catalyst for such reaction, which is a transition metal in reduced valence state, the improvement which comprises utilizing feed gas with operative ratios of such reactants in $CO:NH_3:H_2$ mole ratios of 1:1–4.5:0.1–2 and providing carbon dioxide in the feed gas to improve selectivity of the conversion of carbon monoxide to acetonitrile and in amount at least about 0.5 mole per mole of carbon monoxide and sufficient to retard substantially the conversion of carbon monoxide, and obtaining acetonitrile with improved selectivity.

4,272,453

1-CHLORO-1-P-METHOXYBENZOYLFORMALDOXIME-N-METHYLCARBAMATE

David L. Booth, Crystal Lake, Ill., and Joseph E. Gray, Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,987

Int. Cl.[3] C07C *119/20*

U.S. Cl. 260—543.1 1 Claim

1. The compound 1-chloro-1-p-methoxybenzoylformaldoxime-N-methylcarbamate.

4,272,454

PROCESS FOR THE CHLORINATION OF α-AMINOACIDS

Rodolfo Maggi; Gian P. Maggi, both of Milan, and Guiliano Marcon, Bulciago, all of Italy, assignors to Chimica Bulciago S.r.l., Bulciago, Italy

Filed Apr. 11, 1979, Ser. No. 29,126

Claims priority, application Italy, May 16, 1978, 23446 A/78

Int. Cl.[3] C07C *51/60*

U.S. Cl. 260—544 N 3 Claims

1. A process for the chlorination only of the carboxylic group of p-hydroxy-phenyl-glycine consisting essentially of:

suspending the glycine in an anhydrous solvent at room temperature;

saturating the suspension with gaseous hydrogen chloride;

treating the mixture with a stoichiometric amount of chloromethylene-diammonium-chloride while controlling the temperature so as not to exceed 20° C.; and

filtering the crystalline precipitate product.

4,272,455

PRODUCTION OF MONOALKYLENEGLYCOLS, MONOALKANOLAMINES AND ALKYLENEDIAMINE

Frank T. Cook; Daniel W. Baugh, Jr., and Robert V. Chambers, Jr., all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 107,287

Int. Cl.[3] C07C *29/00, 85/145, 85/20, 89/00*

U.S. Cl. 564—503 10 Claims

1. A process for the production of monoalkyleneglycols, monoalkanolamines and alkylenediamines, comprising the steps of:

a. reacting an alkylene carbonate with ammonia or ammonium carbonate to form a carbamate;

b. heating the carbamate to form a monoalkyleneglycol, an alkyleneurea, a 2-oxazolidinone, or a mixture thereof;

c. further reacting the alkyleneurea, the 2-oxazolidinone, or a mixture thereof with ammonium hydroxide to form an alkylenediamine, a monoalkanolamine, or a mixture thereof, and to form ammonia or ammonium carbonate; and

d. separating the monoalkyleneglycol, the alkylenediamine, the monoalkanolamine, and the ammonia or ammonium carbonate.

4,272,456

DERIVATIVES OF 8-DEHYDRO-VITAMIN A AND THEIR PREPARATION

Manfred Baumann, Mannheim, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

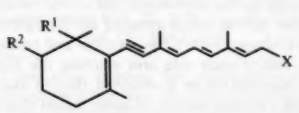
Division of Ser. No. 895,640, Apr. 12, 1978. This application Jan. 12, 1979, Ser. No. 3,021

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717737

Int. Cl.[3] C07C *21/02;* C07F *9/54*

U.S. Cl. 570—186 4 Claims

1. A derivative of 8-dehydro-vitamin A, of the general formula I



I

where R^1 and R^2 are hydrogen or methyl and X is chlorine or bromine.

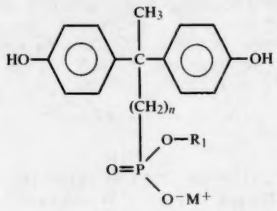
4,272,457

ALKALINE HEMIESTERS AND ALIPHATIC DIESTERS OF BIS-(HYDROXY-4-PHENYL) ALKYLPHOSPHONIC ACIDS

Pierre Poisson, Bernay, and Georges Sturtz, Brest, both of France, assignors to Societe Anonyme Dite: Ato Chimie, France

Filed Dec. 18, 1979, Ser. No. 104,788
Claims priority, application France, Dec. 20, 1978, 78 35753
Int. Cl.³ C07F 9/40
U.S. Cl. 260—953 8 Claims

1. Alkaline hemiesters of bis-(hydroxy-4-phenyl)-alkylphosphonic acids of the general formula:



in which:

n is equal to 0, 1, 2 or 3,

M is an alkaline metal such as lithium, sodium or potassium,

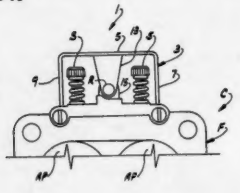
R_1 is cyclohexyl radical or a C_1 to C_6 alkyl radical.

4,272,458

TAMPER RESISTANT IDLE ADJUSTMENT SCREW

Harvey L. Ruth, St. Louis, and Michael B. Phelan, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,756
Int. Cl.³ F02M 3/08
U.S. Cl. 261—23 A 2 Claims



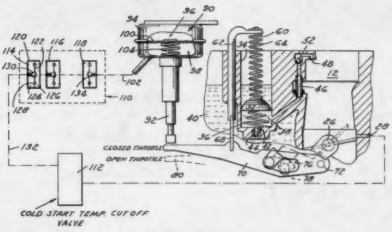
1. In a carburetor for an internal combustion engine, the carburetor having two air passages and two idle speed fuel circuits, each fuel circuit respectively supplying fuel to one of the air passages to mix with air and form a mixture combusted in the engine, an adjustable idle screw for each idle fuel circuit for respectively varying the quantity of fuel drawn through each idle fuel circuit and thus the fuel to air ratio of the mixture produced, the improvement comprising means for making the idle adjustment screw tamper resistant after an initial adjustment of the screw has been made, said means comprising a cover attachable to the carburetor, the cover enclosing both idle adjustment screws when installed on the carburetor, the cover being U-shaped with a base section and two side arms, the forward end of each side arm abutting the body of the carburetor when the cover is attached thereto and the base section having a central portion of lesser height than the outer portions of the base section and a tang extending inwardly from this central portion, the tang being attached to the carburetor.

4,272,459

CARBURETOR ACCELERATOR PUMP LOCKOUT SYSTEM

Alvin H. Berger, Wyandotte, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 959, Jan. 4, 1979, abandoned. This application Apr. 8, 1980, Ser. No. 138,794
Int. Cl.³ F02M 7/08
U.S. Cl. 261—34 A 8 Claims

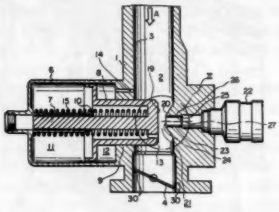


1. An accelerator pump assembly for a carburetor having a rotatable throttle valve controlled induction passage connected to an engine intake manifold, including an accelerator pump movable from an original non-pumping position through a pumping stroke to inject fuel into the induction passage, and linkage means connecting the throttle valve and pump for moving the pump through its pumping stroke upon movement of the throttle valve from an engine idle speed essentially closed position to an off idle engine accelerating position, spring means returning the pump to its original position to reprime the pump, and control means preventing actuation of the pump through its pumping stroke when the throttle valve is moved from the off idle speed position to the idle speed position and quickly returned to the off idle speed position within a predetermined period of time, the connecting means including a pivotal lever operably connecting the throttle valve and pump and a pin and cam slot connecting the lever and throttle valve whereby movement of the throttle valve from an off idle speed position to the idle speed position cams the lever from a pumping position to a non-pumping position whereby return movement of the throttle valve to an off idle position cams the lever to actuate the pump, and stop means in the path of movement of the lever to prevent movement of the lever to the pumping position in response to a predetermined movement of the throttle valve, including a vacuum controlled servo having plunger means movable at times to engage the lever and retractible to a non-engaged position, vacuum passage means connecting the servo to the carburetor induction passage at a location above the idle speed position of the throttle valve so as to subject the passage means to atmospheric pressure when the throttle valve is in the idle speed position to effect movement of the servo plunger means to the non-engaged position with the lever and to subject the passage means to engine manifold vacuum when the throttle valve is moved to the off idle speed position to effect movement of the servo to move the plunger means to engage the lever and prevent actuation of the pump, the control means including vacuum delay means in the vacuum passage means operable to control the servo to prevent actuation of the pump during a momentary return of the throttle valve to the idle speed position from an off idle position while permitting actuation of the pump upon maintenance of the throttle valve in the idle speed position for longer than the predetermined time period.

4,272,460
VARIABLE VENTURI TYPE CARBURETOR

Noboru Watanabe, Susono; Tokuta Inoue, Mishima, and Kiyohiko Oishi, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 28, 1980, Ser. No. 125,633
Claims priority, application Japan, Mar. 7, 1979, 54/25617
Int. Cl.[3] F02M *9/02*
U.S. Cl. 261—53 5 Claims



1. A variable venturi type carburetor of an internal combustion engine, comprising:

a housing;

a bore extending through said housing and having an inner wall defining an intake passage;

a suction piston movably mounted in said housing and having a head portion projecting into said intake passage, said head portion of the suction piston and said inner wall of the intake passage defining a venturi, said suction piston moving so as to change the cross-sectional area of said venturi in response to a change in the vacuum produced in said intake passage downstream of said venturi at a constant value;

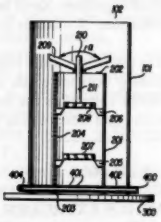
an electronic control fuel injection valve being electronically controlled so as to inject the necessary amount of fuel into said intake passage in response to the engine running conditions, and;

a pipe member being opened at a free end thereof to said intake passage in a position opposite said head portion of the suction piston with regard to said intake passage and connected at the other end thereof to a nozzle end portion of said fuel injection valve so that the fuel injected from the fuel injection valve is supplied through said pipe member into the intake passage.

4,272,461
APPARATUS FOR MIXING GASES WITH LIQUIDS

Grover C. Franklin, Jr., 2250 Warmouth St., San Pedro, Calif. 90732

Filed Mar. 6, 1979, Ser. No. 18,054
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—93 7 Claims



1. An apparatus for mixing gas with liquid comprising:

(a) an inner cylindrical member comprising an elongated tube having upper and lower ends and a plurality of turbines, which are free to rotate about the longitudinal axis thereof mounted within the tube, the turbines being spaced apart from one another and so constructed that adjacent turbines have different rotational direction or velocity, the tube having a solid, imperforate wall;

(b) an outer cylindrical member comprising an elongated tube having upper and lower ends and a plurality of openings in the lower half of the tube wall, the outer and inner cylindrical members being arranged in a concentric manner;

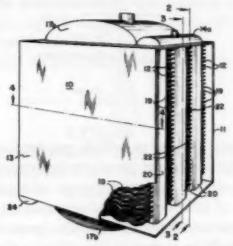
(c) a base member, to one surface of which the lower ends of the inner and outer cylindrical members are attached so that the lower ends are completely sealed; and

(d) a gas inlet pipe for introducing gas bubbles into the lower end of at least one of the cylindrical members.

4,272,462
LIQUID WETTED GAS COOLED HEAT EXCHANGER

Alan G. Butt, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sep. 11, 1980, Ser. No. 185,860
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—153 15 Claims



1. A heat exchanger for cooling a first fluid, comprising

(a) a plurality of passages for conveying the first fluid through the heat exchanger, said passages being formed in generally rectangular extruded layers which are arranged in generally parallel, spaced apart relationship;

(b) a series of fin sheets disposed between the layers of extruded fluid passages, in spaced apart array, for defining passages for an air stream entering at one side of the heat exchanger and exiting the other side;

(c) water passages disposed at the side of the heat exchanger where the air stream enters, along an edge of the extruded layers, and operative to convey water along that edge for distribution into the adjacent air stream passages; and

(d) slot means for distributing water flowing in the water passages into the adjacent air stream passages such that the water is induced to spread uniformly in a thin film over the surfaces of the air stream passages downstream of the slot means by the moving air stream, and to cool the first fluid by evaporation of the thin film of water.

4,272,463
PROCESS FOR PRODUCING METAL POWDER

Ian S. R. Clark, Greenwood Lake, and John K. Pargeter, Warwick, both of N.Y., assignors to The International Nickel Co., Inc., New York, N.Y.

Continuation of Ser. No. 533,756, Dec. 18, 1974, abandoned.
This application Oct. 27, 1976, Ser. No. 736,119
Int. Cl.[3] B01J *2/06*
U.S. Cl. 264—12 11 Claims

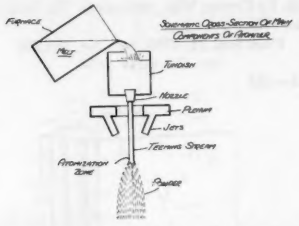
1. An atomization process for producing metal powder through gaseous disintegration of a molten stream in an atomizing tank using a controlled multiple impact mode system as herein defined and which by reason of such multiple impact mode, as opposed to an otherwise single impact mode, (i) powder loss through filigree formation (powder adherence to

the interior wall of the atomizing tank) is minimized, (ii) powder loss through flake formation (powder deflecting from the interior tank wall) is reduced, (iii) a higher yield of metal powder is achieved, the foregoing being achievable (iv) though gas pressure and gas consumption be relatively low, which comprises,

(a) directing molten metal in a downwardly stream through a venturi teeming nozzle at a rate of from about 10 to about 65 kg/min,

(b) directing jets of gas through venturi jets to impinge against the molten metal stream to atomize said stream and thereby cool the stream such that droplets form,

(c) said gas being delivered from the jets at an exit velocity of at least Mach. No. 1 such that a supersonic tongue of up to at least three inches is maintained and under a multiple



impact mode system in which gas impinges against the stream at least twice at precisely determined but different locations using at least two groups of separate jets with a first group of jets being angled downwardly relative to the falling metal stream such that the gaseous medium dispensed therefrom at supersonic velocity strikes the molten metal at a first point downstream, and with at least a second group of downwardly angled jets arranged such that the gaseous medium dispensed therefrom at supersonic velocity strikes the metal at a second point downstream but below the said first point of impact and at an angle different from the first at least about 1° less than the first angle of impact,

(d) and thereafter further cooling the droplets formed to complete the powder formation process.

4,272,464

METHOD FOR PREVENTING PLASTICIZER BLEEDING ON POLYVINYL CHLORIDE SHAPED ARTICLES

Michihiko Asai, Fujisawa; Yoshio Suda, Hachioji; Kiyoshi Imada, Omiya; Susumu Ueno, and Hirokazu Nomura, both of Ibaragi, all of Japan, assignors to Agency of Industrial Science and Technology and Shin-Etsu Chemical Co., Ltd., both of Japan

Filed Jun. 22, 1979, Ser. No. 51,151
Claims priority, application Japan, Jun. 26, 1978, 53-77294
Int. Cl.³ H05B *7/00*
U.S. Cl. 264—22 **11 Claims**

1. A method for preventing bleeding of a plasticizer on the surface of a shaped article of a plasticized polyvinyl chloride resin which comprises

(a) combining the polyvinyl chloride resin with a plasticizer,

(b) blending a urethane elastomer with the polyvinyl chloride resin prior to the fabrication of the polyvinyl chloride resin into a shaped article,

(c) fabricating the polyvinyl chloride resin with plasticizer admixed with the urethane elastomer into a shaped article and

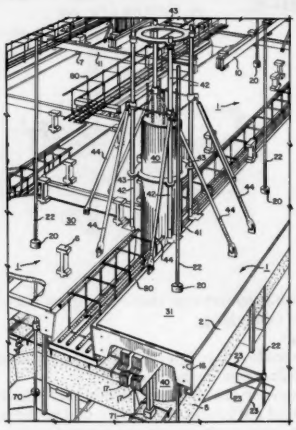
(d) subjecting the shaped article to a treatment with low temperature plasma of a gas.

4,272,465

METHOD FOR MULTI-STORIED CONCRETE CONSTRUCTION AND APPARATUS THEREFOR

Reginald D. Hough, and Vincent J. Kelly, both of 15 Green St., Huntington, N.Y. 11743

Filed May 9, 1979, Ser. No. 37,296
Int. Cl.³ E04B *1/16*
U.S. Cl. 264—33 **6 Claims**



1. Multi-floor concrete construction process including casting concrete floor beams at vertically spaced floor levels comprising the steps of:

(a) assembling a plurality of horizontally spaced pan form units together at a first floor level to form a pan deck wherein facing sides of adjacent pan form units define vertical extending sides of a beam form;

(b) positioning a removable bottom panel between adjacent pan form units to define the bottom of a beam form;

(c) connecting adjacent pan form units together by means of horizontally extending bottom joists clamped to the underside of said pan form units to form an integral pan deck;

(d) casting concrete into the beam form;

(e) connecting adjacent pan form units together by means of horizontally extending top joists clamped to the top side of said pan form units to form an integral pan deck;

(f) allowing the concrete in said beam form to harden to form a cast beam at a first floor level;

(g) unclamping the bottom joists from the underside of said pan form units;

(h) removing said removable bottom panel from between said pan form units;

(i) vertically raising said pan form units together as a single integral pan deck to a second floor level;

(j) repositioning a removable pottom panel between said pan units to define a bottom side of a beam form of a second floor level; and

(k) reconnecting adjacent pan form units together by means of horizontally extending bottom joists clamped to the underside of the pan form units after the integral pan deck has been raised above the cast beam of the first floor level.

4,272,466

SYSTEM AND METHOD OF TEMPERATURE CONTROL FOR PLASTICS EXTRUDER

Holton E. Harris, Westport, Conn., assignor to Harrel, Incorporated, East Norwalk, Conn.

Filed Aug. 4, 1980, Ser. No. 175,048
Int. Cl.³ B29F *1/00*
U.S. Cl. 264—40.6 **15 Claims**

1. An improvement in a temperature control system for a

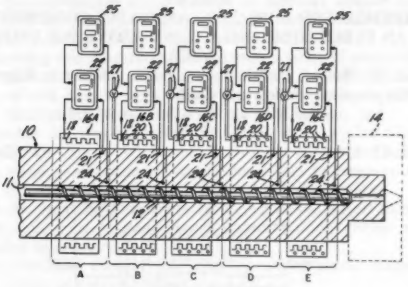
plastics extruder, the extruder having a barrel defining a bore for the movement of plastic therein, at least one temperature control zone served by a temperature altering means including a heater, the temperature altering means being coupled to the barrel to provide heat to the plastic in the bore in the zone, the temperature control system being of the kind that includes a shallow well temperature sensor located in a shallow well near the outer surface of the barrel and in the temperature control zone at a location that is subject to temperature alteration by the temperature altering means, a second temperature sensor located in a deep well in the barrel proximate the bore and in the temperature control zone at a location that is subject to temperature alteration by the temperature altering means; the improvement comprising:

(a) means connected with the shallow well sensor for comparing the temperature indication of the shallow well sensor with a preset temperature setpoint T_1,

(b) means, connected with the means for comparing and with the temperature altering means, for activating the temperature altering means based on the difference between the sensed shallow well temperature indication and T_1,

(c) means connected with the deep well sensor for comparing the temperature indication of the deep well sensor with a further preset temperature set point T_2, and

(d) means responsive to the comparison by said means connected with the deep well sensor for altering the first-mentioned preset temperature set point T_1 based on the difference between the sensed deep well temperature indication and T_2.



12. A method of temperature control for a plastics extruder that has a barrel defining a bore for the movement of plastic therein, a temperature control zone served by a temperature altering means including a heater, the temperature altering means being coupled to the barrel to provide heat to the plastic in the bore in the zone; the temperature control method including:

(a) sensing temperature in a shallow well near the outer surface of the barrel in the temperature control zone at a location that is subject to temperature alteration by the temperature altering means,

(b) sensing temperature in a deep well in the barrel proximate the bore and in the temperature control zone at a location that is subject to temperature alteration by the temperature altering means,

(c) comparing the shallow well temperature with a preset temperature T_1,

(d) activating the temperature altering means based on the difference between the sensed shallow well temperature and T_1,

(e) comparing the deep well temperature with a further preset temperature T_2, and

(f) altering the first-mentioned preset indication T_1 based on the difference between the sensed deep well temperature and T_2.

4,272,467

METHOD FOR PRODUCING AN ESSENTIALLY GAS AND LIQUID IMPERMEABLE LOW DENSITY, CLOSED-CELL, MICROCELLULAR POLYPARABANIC ACID ARTICLE

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 643,063, Dec. 22, 1975, abandoned, which is a division of Ser. No. 356,924, May 3, 1973, abandoned. This application Jan. 3, 1978, Ser. No. 866,443

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 **19 Claims**

1. A method of producing an essentially gas and liquid impermeable, low density, closed-celled, microcellular article of polyparabanic acid which comprises in combination the steps of:

(a) forming a polymer solution of polyparabanic acid and a dipolar, aprotic solvent;

(b) casting said polymer solution onto a suitable surface to form an intermediate stage structure in any suitable prearranged configuration or extruding a fiber;

(c) exposing said resulting structure or fiber to a non-solvent atmosphere of high humidity thereby precipitating said polymer in the presence of the non-solvent atmosphere;

(d) drying said precipitated polymér thereby forming microcellular polyparabanic acid; and

(e) recovering said shaped microcellular article of polyparabanic acid.

4,272,468

METHOD FOR REDUCING THE AGING PERIOD OF POLYETHYLENE FOAMS

Robert C. Slocumb, New Brighton, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 866,504, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 773,873, Mar. 2, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,627

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **9 Claims**

1. A process for reducing the aging period of a thermoplastic polymer foam melt extruded and blown-up from a tubular die under pressure and intimately admixed with a gaseous expansion agent, said process comprising:

(a) cooling the extruded, blown-up foam to a temperature at least 40° C. below its melting point and, thereafter within a period of time of not more than about two weeks,

(b) biaxially orienting the foam to a dimension at least 25% greater in both radial and axial directions than the dimensions of the extruded, blown-up, cooled foam.

4,272,469

METHOD AND APPARATUS FOR FORMING EXPANDED FOAM ARTICLES

Stuart B. Smith, Conyers, Ga., assignor to Integrated Insulation Systems, Inc., Decatur, Ga.

Continuation-in-part of Ser. No. 15,431, Feb. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 899,997, Apr. 25, 1978, abandoned, and a continuation-in-part of Ser. No. 8,688, Jan. 30, 1979, abandoned. This application Jul. 20, 1979, Ser. No. 59,392

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **13 Claims**

1. A method of pre-expanding beads of synthetic thermoplastic resin material containing a blowing agent, comprising the steps of:

(a) heating the beads in a chamber having an interior surface heated to about the fusion temperature of the beads and above the boiling point of the blowing agent;

(b) continuously, at substantially atmospheric pressure, agitating the beads to prevent agglomeration while the beads absorb heat from the interior surface of the chamber, until

said beads reach their softening point and expand in volume;

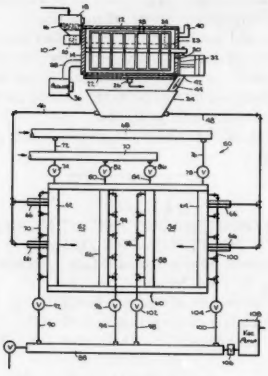
(c) reducing the pressure in said chamber to extract a substantial portion of the gaseous blowing agent from the expanded beads so that the blowing agent content of the expanded beads is from about 0.75 to 2% by weight;

(d) permitting the expanded beads to return to substantially atmospheric pressure.

6. A method of forming an expanded synthetic thermoplastic resin article from a synthetic thermoplastic resin material containing a blowing agent, comprising the steps of:

(a) heating the beads in a chamber having an interior surface heated to about the fusion temperature of the beads and above the boiling point of the blowing agent;

(b) continuously, at substantially atmospheric pressure, agitating the beads to prevent agglomeration while the beads absorb heat from the interior surface of the chamber, until said beads reach their softening point and expand in volume;



(c) reducing the pressure in said chamber to extract a substantial portion of the gaseous blowing agent from the expanded beads so that the blowing agent content of the expanded beads is from about 0.75 to 2% by weight;

(d) permitting the expanded beads to return to substantially atmospheric pressure;

(e) conveying the expanded beads to a mold cavity;

(f) introducing a heated fluid medium from one side of the mold cavity, while maintaining a negative pressure on the opposite side of the mold cavity to further expand the beads and until the beads are completely fused;

(g) discontinuing the supply of heated fluid medium after the fusion is completed and maintaining a negative pressure on the mold cavity to remove residual blowing agent and moisture;

(h) returning the mold cavity to atmospheric pressure after said residual moisture and blowing agent are removed;

(i) removing the thus formed article from the mold cavity.

4,272,470

CROSS-LINKED POLYVINYL ALCOHOL AND METHOD OF MAKING SAME

Li-Chen Hsu, Westlake; Dean W. Sheibley, Sandusky, and Warren H. Philipp, North Olmsted, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 971,473, Dec. 20, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,271

Int. Cl.[3] **B29C** *25/00;* **C08J** *3/24;* **H01M** *2/16, 2/18*

U.S. Cl. 264—104 **6 Claims**

1. A method of making a cross-linked polyvinyl alcohol polymer alkaline battery separator comprising the steps of mixing an aqueous solution containing a film forming polyvinyl alcohol polymer which comprises 10 to 20% by weight of said aqueous solution with a polyaldehyde-polysaccharide cross-linking agent having at least two monosaccharide units, and a plurality of aldehyde groups amounting to between one and two aldehyde groups per monosaccharide unit, said cross-linking agent being present in an amount of about 2.5 to 20% of the theoretical amount required to cross-link all of the available hydroxyl groups of the polyvinyl alcohol, casting a film from said solution, drying said film, and effecting a reaction between the polymer and the cross-linking agent in the presence of an acid catalyst by contacting the dried film with an aqueous acid solution containing a dissolved salt selected from the group consisting of sodium sulfate and potassium sulfate and in quantity sufficient to prevent substantial dissolution of said film in said aqueous acid solution to produce the cross-linked polyvinyl alcohol polymer separator.

4,272,471

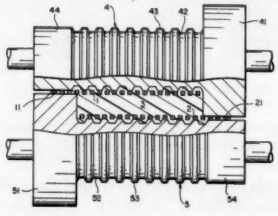
METHOD FOR FORMING LAMINATES COMPRISING AN ELECTRODE AND A CONDUCTIVE POLYMER LAYER

Jack M. Walker, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 21, 1979, Ser. No. 41,071

Int. Cl.[3] **H05B** *3/10*

U.S. Cl. 264—104 **27 Claims**



1. A method of making a laminate comprising a layer of a conductive polymer composition and an electrode in contact with said layer, which method comprises

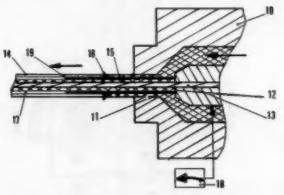
(1) forwarding an electrode in the form of a tape having a plurality of openings therein through an aperture of substantially closed cross-section which is formed by a plurality of rollers which rotate so as to forward material in contact with the rollers through said aperture, said electrode being in contact with at least one of said rollers and thereby being forwarded through said aperture, and said roller contacted by said electrode having a plurality of indentations in the surface thereof, whereby first areas of the electrode are in contact with said roller and second areas of said electrode overlie said indentations;

(2) simultaneously feeding a heat-softened conductive polymer composition into said aperture at a rate sufficient to fill said aperture, whereby said composition is forwarded through said aperture in contact with said electrode and penetrates into but not through openings in said first areas of the electrode and penetrates into and through openings in said second areas of the electrode.

4,272,472
METHOD AND APPARATUS FOR GROOVED SECTION MANUFACTURE

Jean P. Hulin, Conflans, and Michel de Vecchis, Pontoise, both of France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Nov. 5, 1979, Ser. No. 90,993
Claims priority, application France, Nov. 17, 1978, 78 32530
Int. Cl.³ B29C *17/16*; G02B *5/14*
U.S. Cl. 264—146 **4 Claims**



1. A process for manufacturing a grooved plastic section with open grooves direct from extrusion through a cross-head without further machining comprising the steps of:

extruding molten plastic material through a die opening coaxial with a central longitudinal guide located upstream with respect to said die, said guide carrying longitudinal pins distributed along a circle of diameter smaller than said die opening and extending downstream of said die so as to provide ducts within the extruded section;

drawing said extruded section across a series of outwardly directed cutting means disposed at the downstream ends of said pins to form radial slits leading from the ducts through the periphery of the extruded section; and

further drawing said extruded section along guides which fill the ducts and extend downstream from the pins a distance sufficient to enable the guides to preserve the shapes of the ducts until the extruded material sets.

3. An apparatus for manufacturing a grooved plastic section with open grooves direct from extrusion without further machining which includes:

a cross-head extruder inlet forcing molten plastic material along an horizontal line;

a smooth horizontal cylindrical guide surrounded by said molten material;

protruding pins mounted on a circle on the downstream end of said guide to delimit ducts;

a die coaxial with said guide and downstream of said guide with an opening surrounding said pins for outwardly shaping said section;

cutting means made of triangular blades mounted on the downstream end of said pins opening slits in said ducts;

flexible wires mounted on the downstream ends of said pins to fill said slitted ducts.

4,272,473
METHOD FOR EMBOSSING AND PERFORATING A RUNNING RIBBON OF THERMOPLASTIC FILM ON A METALLIC PATTERN ROLL

Coenraad E. Riemersma, and Theodore P. Merz, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

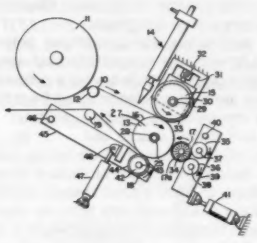
Filed Dec. 7, 1978, Ser. No. 967,194
Int. Cl.³ B29C *17/14*
U.S. Cl. 264—154 **16 Claims**

1. A method to produce an embossed thermoplastic film and to perforate the tips of the bosses thereof, comprising the following steps:

(a) supplying a heated, deformable thermoplastic film to a male patterned embossing surface having a multiplicity of raised knobs with apices which define a raised surface;

(b) conforming the thermoplastic film into intimate contact with the raised knobs of the male patterned embossing surface to produce an embossed film having a multiplicity of raised bosses;

(c) perforating the bosses of the film by pressing the tips of said raised bosses between said apices of said knobs and a heated perforating surface to form apertures in the apices of said raised bosses, while maintaining registration and contact between said film and said raised knobs;



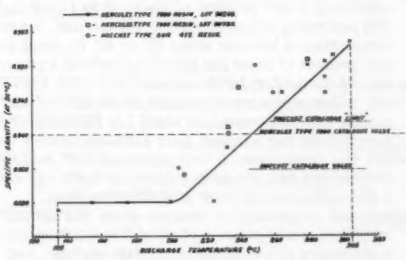
(d) cooling said embossed film to a less deformable state while maintaining registration and contact between said embossed film and said raised knobs; and

(e) removing said embossed film from said male patterned embossing surface.

4,272,474
PROCESS FOR PRODUCING ARTICLES OF ULTRA HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE

Zenas Crocker, Quebec, Canada, assignor to Synergistics Chemicals Limited, Concorde, Canada

Filed Nov. 6, 1979, Ser. No. 91,780
Int. Cl.³ B29F *3/02*, *3/014*
U.S. Cl. 264—176 R **17 Claims**



1. A process for the production of a fabricated article of a desired shape from ultra high molecular weight high density polyethylene having a molecular weight greater than 1.7×10^6 comprising the steps of:

intensively mixing and thermo-kinetically heating ultra high molecular weight polyethylene resin in an enclosed container with a plurality of blades attached to arms rotating about an axis, with a blade tip speed of at least 18 m/second, the resin is heated quickly at a desired discharge temperature of at least 135° C. without shearing action occurring and with thermal degradation being controlled, discharging the resin after the intensive mixing step, and forming the ultra high molecular weight polyethylene resin into the desired shape within a time such that degradation does not occur.

4,272,475

PROCESS FOR THE LOW TEMPERATURE SHAPING PROCESSING OF POLYETHYLENE TEREPHTHALATE

Chang S. Chi, No. 29-3, Nishihara 3-chome, Shibuya-ku, Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,552
Claims priority, application Japan, Feb. 12, 1977, 52/14414
Int. Cl.[3] D01F *11/00*
U.S. Cl. 264—210.1 23 Claims

1. A process for the low temperature shaping of polyethylene terephthalate, which comprises:

molding a starting material comprising polyethylene terephthalate having an average molecular weight of at least 12,000 into a shaped article having a predetermined initial shape by a molding process selected from the group consisting of extrusion and injection molding;

solidifying said shaped article; and

pressing the solidified shaped article having said initial shape against a mold having a predetermined three-dimensional second shape to form a final shaped article having said second shape at a temperature between about 0° to about 240° C., said temperature being dependent upon the crystallinity, thickness and filler content of said article and being the highest of

a temperature between about 0° and about 40° C. when the thickness of the first shaped article is below 3 mm, a temperature between about 40° C. and 60° C. when the thickness of said first shaped article is in the range from 3 mm to 5 mm, a temperature between about 60° C. and 240° C. when the thickness of said first shaped article is greater than 5 mm,

a temperature below 80° C. when the starting material is non-crystalline or of low crystallinity,

a temperature between 70° C. and 240° C. when the material is of high crystallinity, and

a temperature between 70° C. and 240° C. when the filler content is at least 10% by weight of the starting material,

the pressing operation being performed with a unit pressure and a processing rate dependent upon the temperature and within the following parameters:

when said temperature is between about 0° and 40° C., employing a unit pressure of about 20 to 20,000 kg/cm^2 and processing rate of about 2 to 500 cm/min.,

when said temperature is between about 40° and 60° C., employing a unit pressure of about 10 to 15,000 kg/cm^2 and processing rate of about 5 to 500 cm/min., when said temperature is between about 60° to 80° C., employing a unit pressure of about 5 to 12,000 kg/cm^2 and a processing rate of about 10 to 1,000 cm/min.,

when said temperature is between about 80° and 120° C., employing a unit pressure of about 3 to 10,000 kg/cm^2 and a processing rate of about 20 to 2,000 cm/min.,

when said temperature is between about 120° to 160° C., employing a unit pressure of about 2 to 6,000 kg/cm^2 and a processing rate of about 30 to 3,000 cm/min.,

when said temperature is between about 160° to 200° C., employing a unit pressure of about 2 to 4,000 kg/cm^2 and a processing rate of about 30 to 5,000 cm/min., and

when said temperature is between about 200° to 240° C., employing a unit pressure of about 2 to 2,000 kg/cm^2 and a processing rate of about 50 to 10,000 cm/min.

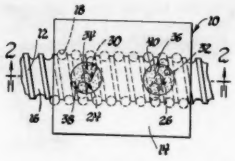
4,272,476

MANUFACTURE OF BALL NUT WITH INTERNAL CROSSOVER PATH FOR BALL RECIRCULATION

Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1979, Ser. No. 92,432
Int. Cl.[3] B29C *1/02*
U.S. Cl. 264—225 3 Claims

1. A method of making a ball nut for a ball nut and screw assembly with an internal ball return crossover comprising the steps of providing a master ball nut with an internal helical groove therein for a train of balls and with a radial opening in the wall of said ball nut which intersects the longitudinal axis of said ball nut and two adjacent turns of said groove, installing an insert into said opening having crossover channel for said balls internally formed therein to provide a ball path which interconnects said two adjacent turns of said groove, using said master ball nut and said insert as a master mold, molding an imprint mold from said master mold that profiles a portion of said helical groove and said ball crossover channel, removing said imprint mold from said master mold, inserting said imprint mold into a blank ball nut that has an internal helical thread



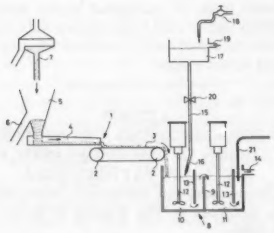
groove and a radial opening that conforms to the helical groove and radial opening of said master mold, supplying a plastic material into said radial opening of said blank ball nut while the profile of the helical groove formed on said imprint mold engages the helical groove of said blank ball nut and while the profile of the ball crossover channel is disposed in the inner end of said radial opening, hardening said plastic material to thereby form a plug with a ball crossover channel corresponding to the crossover channel of said master insert, and removing said imprint mold from said blank ball nut.

4,272,477

APPARATUS FOR PREPARATION OF SOLUTIONS OF SOLID SAMPLES FOR WET CHEMICAL ANALYSIS

Fritz Hagedorn, Sehnde, Fed. Rep. of Germany, assignor to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,188
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829690
Int. Cl.[3] G01N *1/04, 1/28*
U.S. Cl. 422—50 10 Claims



1. Apparatus for preparing solutions of solids samples for wet chemical analysis, said apparatus comprising:

(a) an overflow dissolving vessel, divided by an overflow baffle into at least two chambers,

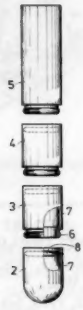
(b) means for maintaining a constant stream of solvent flowing successively through the chambers of said overflow dissolving vessel, and

(c) metering conveyor scale means for continuously metering a measured amount of a solid sample to be analyzed to the overflow dissolving vessel.

4,272,478
DISCARDABLE REACTION RECEPTACLE FOR USE IN IMMUNOLOGICAL ASSAY

Reijo Vihko, Jaakonkuja 1 E 3, 90230 Oulu 23, Finland

Filed Feb. 21, 1979, Ser. No. 13,315
Claims priority, application Finland, Feb. 27, 1978, 780656
Int. Cl.[3] G01N *33/50*
U.S. Cl. 422—57 4 Claims

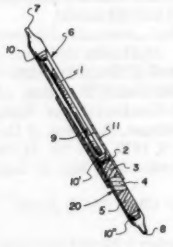


1. In a discardable reaction receptacle for use in immunological assay and intended for the performing of reactions between a substance to be measured, a labelling substance and an antibody, the improvement wherein said reaction receptacle consists essentially of mutually detachably connected parts forming the walls of the receptacle and comprising an outside wall formed by at least one of said parts and defining a space for the reactions to take place, said space being left open from one end, and said mutually detachably connected parts carrying different kinds of antibodies fixed to their surfaces for the purpose of binding different reaction products so as to permit simultaneous determination of several substances from one and the same sample, at least one of the antibodies being fixed to the inner surface of a part which forms said outside wall or a section of it.

4,272,479
TESTING TUBE FOR MEASURING CHROMATE AND CHROMIC ACID AEROSOLS IN AIR

Karl-Heinz Huneke, and Wilfried Laufenberg, both of Lübeck, Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 125,979
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913283
Int. Cl.[3] F01B *23/00*; B63H *1/00*; G01N *27/62*
U.S. Cl. 422—57 7 Claims

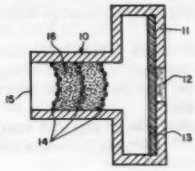


1. An improved gas testing device of the type having a glass tube, sealed breakoff points on the opposite ends of the tube, and an ampoule mounted within the tube adjacent one end of the glass tube within the breaking area of one of the breakoff points, an improved arrangement for measuring chromate and chromic acids in air to be drawn through the glass tube comprising, in the direction of flow of the air to be drawn through the tube, the ampoule, a filter paper adjacent the ampoule, a granular reagent layer of quartz impregnated with diphenyl carbazide, a granular layer of silica gel and a granular collecting layer of quartz, and further comprising a quantity of sulfuric acid within said ampoule.

4,272,480
DEVICE FOR REDUCING THE SENSITIVITY OF AN ETHYLENE OXIDE LEAK DETECTOR

Bertram O. Stull, and Russell Reed, Jr., both of Ridgecrest, Calif., assignors to The United State of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1980, Ser. No. 124,369
Int. Cl.[3] G01N *21/01, 31/22*
U.S. Cl. 422—58 5 Claims



1. A device for determining the presence of ethylene oxide vapor, said device comprising:

A. an indicator which indicates the presence of ethylene oxide vapor if it comes into contact with ethylene oxide vapor;

B. a housing for supporting said indicator in an area of potential vapor source;

C. a scrubber system in said housing;

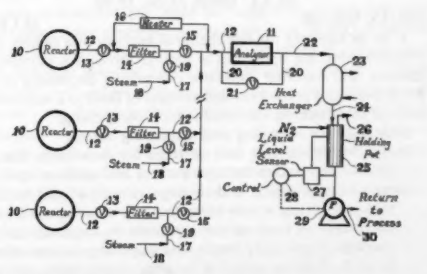
D. said scrubber system being supported adjacent to said indicator between said indicator and said potential vapor source; and

E. said scrubber system comprising activated charcoal coated with silicotungstic acid and being effective to block a certain amount of ethylene oxide vapor from reaching said indicator.

4,272,481
SYSTEM AND METHOD FOR PROVIDING A VAPOR PHASE SAMPLE FOR ANALYSIS

Ross C. Ahlstrom, Jr., Lake Jackson, and Craig E. Meppen, New Braunfels, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1979, Ser. No. 41,158
Int. Cl.[3] G01N *21/00, 7/00, 31/08*
U.S. Cl. 422—62 5 Claims



1. A system for providing a vapor phase chemical sample for

analysis, said vapor phase sample containing components which are condensable, and components which are non-condensable, at atmospheric pressure and at ambient temperature; the system comprising:

a chemical analyzer means, adapted for receiving and analyzing said vapor phase sample;

at least one delivery conduit which connects the analyzer means to at least one chemical process apparatus, for delivering the vapor phase sample to the analyzer;

a heater means associated with each delivery conduit, for heating the delivery conduit to a temperature sufficient to maintain the sample in a vapor phase;

a shut-off valve, and a stream select valve, each valve being installed in the delivery conduit between the chemical process apparatus and the analyzer means, the stream select valve being adapted for selecting a specific portion of the vapor phase sample for delivery to the analyzer means;

a purge conduit connected into each delivery conduit ahead of the stream select valve and behind the shut-off valve, for receiving and carrying a purge fluid into said delivery conduit;

a backflush valve which is installed in each purge conduit, and which is adapted for backflushing the purge fluid through each delivery conduit and back into the chemical process apparatus;

a discharge conduit connecting the analyzer means to a disposal point, for carrying the vapor phase sample out of the analyzer means;

a by-pass conduit which connects into the delivery conduit ahead of the analyzer and into the discharge conduit behind the analyzer, for carrying a contaminated portion of the vapor phase sample past the analyzer means; and

a by-pass valve installed in the by-pass conduit, for regulating flow of the contaminated sample through the by-pass conduit;

a condenser means connected into the discharge conduit, for converting the condensable vapor phase components to a liquid phase component;

a collecting vessel, for collecting the liquid phase component, and the non-condensable vapor phase component;

pump means connected into the collecting vessel and in communication with the chemical process apparatus, for pumping the liquid phase component back to said chemical process apparatus;

control means associated with the collecting vessel and the pump means, for regulating the liquid level in said collecting vessel; and

vent means in the collecting vessel, for carrying the non-condensable vapor phase components out of the collecting vessel.

4,272,482

METERING APPARATUS

Thomas C. Jessop, Webster, and Jeffrey L. Helfer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

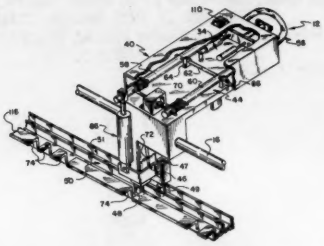
Filed Jul. 2, 1979, Ser. No. 54,060
Int. Cl.[3] G01N *35/04, 35/06*
U.S. Cl. 422—65 **15 Claims**

1. In an analyzer for the chemical analysis of a sample fluid wherein metering apparatus is moved through a plurality of stations, said metering apparatus comprising dispensing means for delivering a predetermined amount of fluid to a substrate in each of said stations, the combination comprising:

a carriage for receiving said dispensing means;

means for supporting said carriage for movement along a path which passes through each of said stations; and

means for positioning said carriage at each of said stations, said positioning means comprising first and second locating means at each station operable in sequence on said carriage to precisely locate said dispensing means relative to said substrate, said first locating means being operable on said carriage to locate the carriage along said path between predetermined limits and said second locating means being operable on said carriage after said first locating means to precisely locate said carriage along said path within said limits.

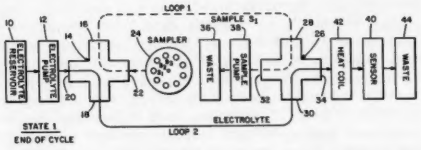


4,272,483

SOLUTION HANDLING APPARATUS AND METHOD

Karl G. Schick, Whitefish Bay, Wis., assignor to Fiatron Systems, Inc., Milwaukee, Wis.

Filed Jul. 13, 1979, Ser. No. 57,369
Int. Cl.[3] G01N *21/00, 31/00*
U.S. Cl. 422—67 **10 Claims**



1. A solution handling apparatus for use in flow injection analysis and liquid chromatography comprising:

(a) means for supplying background electrolyte,

(b) means for supplying solutions for analysis,

(c) first and second fluid carrying channels,

(d) first valve means having first and second states for simultaneously injecting said solutions in an amount to fill one of said channels and electrolyte in an amount to fill the other of said channels in said first state and vice versa in said second state,

(e) second valve means having first and second states for simultaneously receiving and distributing the solution from said one filled channel to one location and electrolyte from said other filled channel to a second location in said first state and vice versa in said second state,

(f) means for simultaneous switching said first and second valve means between the first and second states in a manner described in (d) and (e) above.

4,272,484

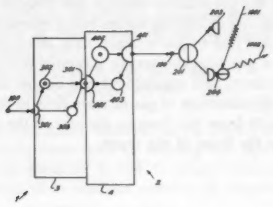
FILLING FOR OPTODES

Dietrich W. Lübbers, Dortmund, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,780
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856251
Int. Cl.[3] G01N *21/78, 21/64*
U.S. Cl. 422—68 **13 Claims**

1. In an indicator chamber (optode) comprising an indicator and a membrane surrounding said indicator and impermeable to it, for measurement of concentration of particles by means of a light measurement system including a light source, a light receiver and readout means, the improvement comprising providing in a filling within said indicator chamber a substance which reacts with said particle to be measured and which

generates through said reaction a reaction product which modifies the optical properties of said indicator, thereby allowing the preparation of highly selective indicator chambers with a broad range of applicability.



4,272,485

MEMBRANES FOR OPTODES

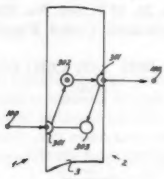
Dietrich W. Lübbers, Dortmund, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,781

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856252

Int. Cl.³ G01N *21/78, 21/64*

U.S. Cl. 422—68 **16 Claims**



1. In an indicator arrangement comprising an indicator and a membrane forming a chamber surrounding said indicator and impermeable to it, for determination of concentrations of particle components, the improvement comprising providing within said membrane a carrier which is mobile within said membrane and which transports said particles through said membrane.

4,272,486

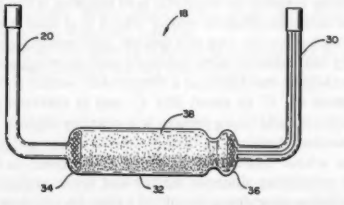
INTERFERENCE REACTOR TO PROVIDE SELECTIVE SO_2 MEASUREMENT BY FLUORESCENT METHODOLOGY

John N. Harman, III, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 14, 1979, Ser. No. 12,174

Int. Cl.³ G01N *21/64, 21/33*

U.S. Cl. 422—91 **14 Claims**



1. A converter for removing polynuclear aromatic hydrocarbons from the sample gas stream of a fluorescent gas analyzer, without substantial effect upon any sulfur dioxide contained in said sample gas stream, comprising:

housing means having an inlet for receiving a sample gas stream and an outlet for exhausting said sample gas stream;

a mixture of vanadium pentoxide and an inert material disposed within said housing means to contact said sample gas stream; and

means adjacent said inlet and said outlet to prevent loss of said vanadium pentoxide.

4,272,487

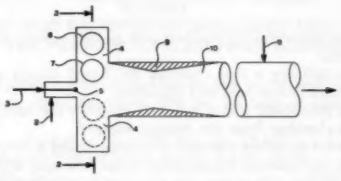
CARBON BLACK REACTOR WITH INNER AND OUTER HOT COMBUSTION GAS ENTRIES PROVIDING PROTECTIVE BLANKET AND EXTRA HOT GASES FOR CONVERSION OF FEED

Oliver K. Austin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 957,608, Nov. 3, 1978, Pat. No. 4,220,624, which is a division of Ser. No. 701,007, Jun. 28, 1978, Pat. No. 4,134,966. This application Dec. 3, 1979, Ser. No. 99,390

Int. Cl.³ C09C *1/50*

U.S. Cl. 422—150 **6 Claims**

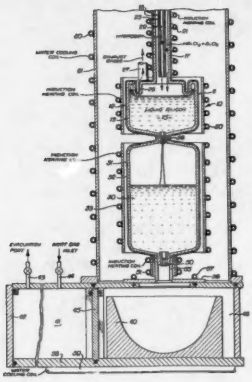


1. In an elongated carbon black production furnace in which there is located at one end of an elongated passageway an axial hydrocarbon oil or gas feed for feeding hydrocarbon to be converted to carbon black and at the other end means for removing gases and carbon black produced therein, disposed at said one end of said elongated passageway, a hot combustion gas section in axial alignment with the longitudinal axis of said passageway, and means for supplying said hot combustion gases in said section; the improvement which comprises at least two individual tangential entry combustion gas feeds consisting essentially of an outer tangential entry gas feed, and an inner tangential entry gas feed disposed inside said outer tangential entry gas feed with respect to the longitudinal axis of said passageway, said inner gas feed being spaced from the periphery or wall portion of said section, and means upon each of said combustion gas feeds for supplying tangentially into said passageway combustion gas from each of said feeds into said section independently one from the other in manner such that different rates of flow of combustion gases of different temperatures and/or composition can be simultaneously effected through said feeds into said section, thereby to produce a blanket of combustion gases to travel adjacent the periphery or wall portion of said section and a relatively hotter, inner layer of combustion gases encompassed within said blanket, whereby the oil to be converted to carbon black can be subjected to optimum and/or hotter-than-usual combustion gases while maintaining for a substantial length of travel the blanket around said inner hotter or optimum combustion gases along the longitudinal axis of said passageway, thus to yield more carbon black from the oil than otherwise obtainable, without injury to said combustion gas section.

4,272,488
APPARATUS FOR PRODUCING AND CASTING LIQUID SILICON

Justice N. Carman, Tarzana, Calif., assignor to John S. Pennish, Los Angeles, Calif., a part interest

Division of Ser. No. 800,191, May 25, 1977, Pat. No. 4,176,166.
This application Sep. 14, 1979, Ser. No. 75,644
Int. Cl.[3] B01J *19/02*
U.S. Cl. 422—199 7 Claims

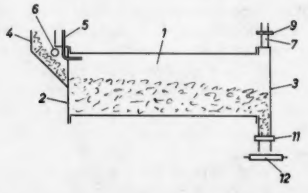


1. In an apparatus for continuously making silicon, the combination of:
means defining a first chamber for liquid silicon with no fixed targets in said first chamber;
means positioned about said first chamber for heating said first chamber from the exterior thereof;
means for directing a stream of hydrogen and a stream of at least one gaseous halogenated silane into said first chamber so that said stream mix together in said first chamber;
means for removing exhaust gases from said first chamber;
means defining a second chamber separate from said first chamber for accumulating liquid silicon; and
means interconnecting said first and second chambers for flow of liquid silicon from said first chamber to said second chamber.

4,272,489
DEVICE FOR COMPOSTING REFUSE AND SEWAGE SLURRY

Willibald Lutz, and Heinz Mooss, both of Vienna, Austria, assignors to Ruthner Industrieanlagen-Aktiengesellschaft, Vienna, Austria

Filed Nov. 21, 1978, Ser. No. 962,644
Claims priority, application Austria, Nov. 24, 1977, 8433/77
Int. Cl.[3] B01J *19/28;* C05F *11/08*
U.S. Cl. 422—209 6 Claims

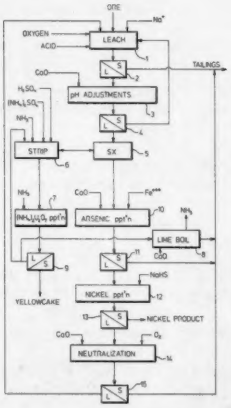


1. A device for composting refuse and sewage slurry, comprising a rotatable drum supported substantially horizontally having a fixed front wall through which refuse and sewage slurry may be fed to the drum, and a fixed rear wall through which the mixture in the drum may be removed, said fixed walls having introducing and extracting means for introducing an oxygen containing gas mixture through one wall and for extracting the gas mixture through the other of said walls, said introducing and extracting means being operable to control the direction and rate of gas mixture flow through the drum and including a gas pipeline having a regulator provided at each end of the drum, said regulators being connectable to a blower such that the direction of gas mixture flow in the drum may be effected both from the front to the rear of the drum and from the rear to the front of the drum.

4,272,490
HYDROMETALLURGICAL PROCESS FOR THE TREATMENT OF ORES

Verner B. Sefton, Edmonton, and Ian M. Masters, Fort Saskatchewan, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Jun. 28, 1978, Ser. No. 920,027
Claims priority, application United Kingdom, Jul. 5, 1977, 28093/77
Int. Cl.[3] B01D *11/00;* B01F *1/00;* C01G *43/00, 56/00;* C22B *11/00*
U.S. Cl. 423—18 10 Claims



1. A process for the recovery of uranium values from uranium-bearing material by sulphuric acid leaching when the material also contains siliceous matter which is at least partly soluble in sulphuric acid, iron and arsenic, said process comprising leaching said material with sulphuric acid in an aqueous slurry under oxidizing conditions at a temperature within the range of from about 65° C. to about 200° C. and at elevated pressure, said sulphuric acid being present in a quantity slightly in excess of the amount required to dissolve the uranium and any other element whose dissolution is desired to produce an insoluble residue containing siliceous matter and ferric arsenate, and a leach solution containing dissolved values by uranium and said any other element.

4,272,491
FERRIC LEACHING OF URANIUM VALUES FROM LIGNITE

Lawrence E. Schultze, Sparks; Donald J. Bauer, and Michael T. Morimoto, both of Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

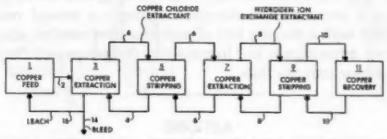
Filed Jun. 1, 1979, Ser. No. 44,814
Int. Cl.[3] C01G *43/00*
U.S. Cl. 423—20 6 Claims

1. A process for extracting uranium values from a uraniferous lignite consisting essentially of treating the lignite at a temperature of from about 20° to 104° C. with a leach solution consisting essentially of an aqueous solution of a ferric salt.

4,272,492
SELECTIVE EXTRACTION AND RECOVERY OF COPPER

Wayne H. Jensen, 1102 E. 10th, Casa Grande, Ariz. 85222

Filed May 31, 1979, Ser. No. 44,080
Int. Cl.[3] C01G *3/10*
U.S. Cl. 423—24 62 Claims



11. A process for selectively recovering copper from an acidic chloride solution containing copper, comprising:

contacting said acidic chloride solution containing copper with an extractant, said extractant selectively extracting copper as copper chloride from said acidic chloride solution;

contacting said acidic chloride solution from which copper has been selectively extracted by said extractant with a hydrogen ion exchange extractant, said hydrogen ion exchange extractant selectively extracting substantially all copper remaining in said acidic chloride solution;

contacting said extractant containing copper extracted from said acidic chloride solution as copper chloride with a relatively neutral aqueous stripping solution to strip copper from said extractant thereby forming an aqueous stripping solution pregnant with copper;

contacting said aqueous stripping solution pregnant with copper with said hydrogen ion exchange extractant, said hydrogen ion exchange extractant selectively extracting copper from said aqueous stripping solution pregnant with copper; and

contacting said hydrogen ion exchange extractant containing copper extracted from said acidic chloride solution and said pregnant aqueous stripping solution with an aqueous acidic stripping solution to strip copper from said hydrogen ion exchange extractant thereby forming an aqueous acidic stripping solution pregnant with copper, saleable copper being recoverable from said pregnant aqueous acidic stripping solution.

21. The process of claim 11 wherein said extractant is comprised of a tertiary amine having the formula:

wherein R_1, R_2, and R_3 are straight or branched aliphatic chains containing from 6 to 18 carbon atoms, said tertiary amine being dissolved in an inert organic solvent carrier.

4,272,493
PELLETIZING SULFATION OF ANODE SLIMES

Kohur N. Subramanian, East Hanover, N.J.; Rotrou A. Hall, Mississauga, and Gerald V. Glaum, Oakville, both of Canada, assignors to The International Nickel Co., Inc., New York, N.Y.

Filed May 5, 1980, Ser. No. 146,231
Claims priority, application Canada, Jun. 14, 1979, 329748
Int. Cl.[3] C01G *3/10;* C01B *19/02*
U.S. Cl. 423—41 5 Claims

1. In a process for treating anode slimes which contain copper, selenium and tellurium with sulfuric acid to recover water-soluble compounds of copper and tellurium in solid form, the improvement which comprises introducing the slimes and concentrated sulfuric acid in an amount of between about 120% and 150% by weight of the slime solids into a heated pelletizing apparatus, maintaining the slimes at a temperature between about 180° and 240° C. while forming pellets thereof, and withdrawing formed pellets at such a rate as to provide a residence time of between about 0.5 and 4 hours for the slimes in the pelletizing apparatus, whereby reaction between the sulfuric acid and slimes to solubilize at least part of the copper and tellurium present takes place simultaneously with formation of the pellets.

4,272,494
METHOD FOR RECOVERING METALS OF GROUPS V-VI OF THE PERIODIC SYSTEM FROM SOLUTIONS AND PULPS

Nazar Y. Ljubman, ulitsa Dzhandosova, 166, kv. 38, and Jury N. Svyadosch, ulitsa Tulebaeva, 139, kv. 19, both of Alma-Ata, U.S.S.R.

Filed Mar. 21, 1979, Ser. No. 22,415
Int. Cl.[3] C01G *39/00, 30/00, 28/00, 29/00*
U.S. Cl. 423—54 8 Claims

1. A method for recovering metals selected from the group consisting of arsenic, antimony, bismuth, and molybdenum from a sulfate solution containing said metals which comprises:

polycondensation of a polyhydric phenol and formaldehyde, with the retention of water in three stages, to form a selective ion exchange resin;

conducting the first stage at a temperature of about 50° to 80° C., with stirring, at a pH of about 0.2 to 1.0, at a molar ratio of formaldehyde to polyhydric phenol of about 1.2–3:1, and a weight ratio of water to polyhydric phenol of about 2–7:1, for a time sufficient to ensure a 96 to 98% conversion of the polyatomic phenol;

conducting the second stage at a temperature of about 20° to 54° C. to ensure recovery of a polymeric product in sizes of about 0.008 to 20 microns;

recovering said polymeric product in the third stage and heating it in a sealed vessel at a temperature of about 70° to 90° C. for about 10 to 60 hours to complete formation of the ion exchange resin; and

contacting said sulfate solution containing said metals with said ion exchange resin.

4,272,495
CHEMICAL PROCESSES

Phillip S. B. Stewart, Beaumaris, and Jeremy J. Lees, Birchgrove, both of Australia, assignors to Woodsreef Mines Limited, Barraba, Australia

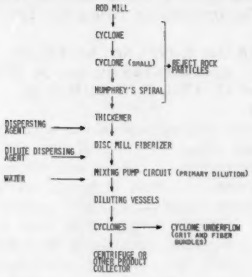
Filed Jan. 22, 1979, Ser. No. 5,586
Int. Cl.[3] B01D *9/02*
U.S. Cl. 423—167 17 Claims

1. A method for producing agglomerates of unit, or near unit, fibrils of chrysotile asbestos from crude chrysotile asbestos, comprising the steps of:

(a) forming a stable gel structure of unit, or near unit, fibrils

of asbestos by mixing the crude asbestos with an aqueous solution of an asbestos dispersing agent to disperse the fibrils to form the stable gel structure;

(b) diluting the gel structure dispersion with water in a first dilution step to form a readily pourable dispersion without diluting the concentration of the asbestos dispersing agent



to a level where it is insufficient to maintain the asbestos fibrils in a dispersed state; and

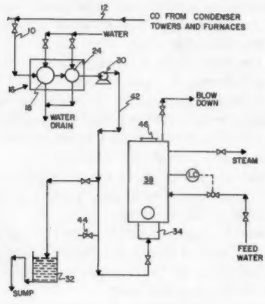
(c) rapidly diluting the dispersion with water in a second dilution step sufficient to reduce the concentration of the asbestos dispersing agent to a level where it is insufficient to maintain the dispersion such that the dispersion of the fibrils collapses and agglomerates of the fibrils are formed.

4,272,496

PROCESSING ELEMENTAL PHOSPHORUS (P_4) CONTAINING GAS STREAMS

William J. Powell, Butte, Mont., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 26, 1979, Ser. No. 107,466
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 **8 Claims**



1. A process for reducing the tendency of a carbon monoxide gas stream, containing a minor level of elemental phosphorus, to corrode metallic surfaces in a combustion zone upon combustion of the gas stream in the combustion zone to combustion gases comprising, prior to combustion:

(a) cooling the gas stream to a sufficiently low temperature to condense a quantity of elemental phosphorus to produce a reduced level of elemental phosphorus in the gas stream; and

(b) diluting the gas stream with an effective amount of combustible gas, wherein the effective amount of combustible gas is an amount which is effective in producing a dew point of the combustion gases, with respect to the quantity of acid produced by the combustion of the reduced level of elemental phosphorus, less than the temperature of the metallic surfaces.

4,272,497

METHOD FOR TREATING A NITROGEN OXIDE- AND SULPHUR OXIDE-CONTAINING WASTE GAS

Kazuyoshi Takahashi, Hiratsuka, and Hiromi Tanaka, Abiko, both of Japan, assignors to Sumitomo Heavy Industries, Ltd. and Electric Power Development Co., Ltd., both of Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 172,733
Claims priority, application Japan, Feb. 8, 1979, 54-13736
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—239 **7 Claims**

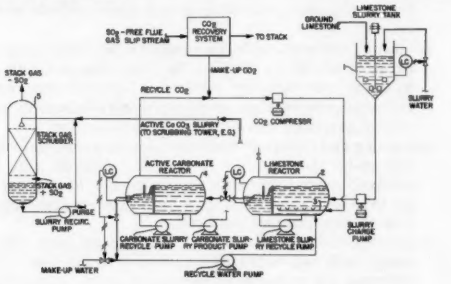
1. A method for removing nitrogen oxides and sulphur oxides from waste gas which comprises the steps of: mixing gaseous ammonia with a nitrogen oxide- and sulphur oxide-containing waste gas; passing the resulting mixed gas in a cross current direction through a first reactor provided with a moving bed of carbonaceous catalyst adapted to move downwards; introducing the gas passed through the upper part of said reactor into a flue without undergoing any treatment; re-mixing the gas passed through the bottom part of the reactor with a fresh gaseous ammonia; thereafter allowing said mixed gas to pass in a cross current direction through a second reactor provided with a moving bed of carbonaceous catalyst adapted to move downwards; and introducing the gas passed through said reactor into the flue.

4,272,498

PROCESS FOR COMMINUTING AND ACTIVATING LIMESTONE BY REACTION WITH CO_2

Albert C. Faatz, Montclair, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 25, 1979, Ser. No. 78,972
Int. Cl.³ B02C *19/00;* **C01B** *11/00;* **C01F** *5/24*
U.S. Cl. 423—242 **18 Claims**



8. A process for the removal of sulfur oxides from a gas mixture containing same, said process comprising:

(a) forming an aqueous slurry of particulate calcium carbonate or limestone;

(b) contacting said aqueous slurry with gaseous carbon dioxide at a pressure of carbon dioxide which is at least the minimum transition pressure required to convert calcium carbonate into an unstable solid calcium compound at the temperature employed, and continuing said contacting for a sufficient period of time to substantially convert the calcium carbonate into an unstable solid calcium compound;

(c) instantaneously reducing the pressure on the slurry to significantly less than said minimum transition pressure for the temperature employed, to produce an aqueous slurry containing calcium carbonate of a fine powder particle size; and

(d) contacting the gas mixture with the aqueous slurry con-

taining calcium carbonate of a fine powder particle size formed in step (c).

4,272,499

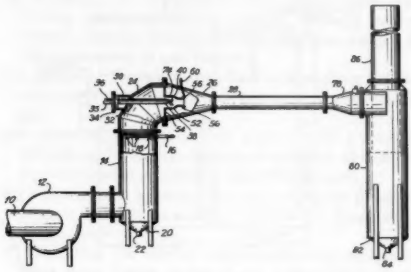
PROCESS AND APPARATUS FOR THE REMOVAL OF PARTICULATE MATTER AND REACTIVE OR WATER SOLUBLE GASES FROM CARRIER GASES

Robert W. Cason, Omaha; Orvis L. Holland, Linden; Floyd C. Russell, Daingerfield; Malley R. Bass, and James L. Frier, both of Longview, all of Tex., assignors to Lone Star Steel Company, Dallas, Tex.

Filed Nov. 28, 1979, Ser. No. 98,069

Int. Cl.[3] **C01B** *17/00;* **B01D** *45/00, 47/10*

U.S. Cl. 423—242 **21 Claims**



1. In a process for the purification of a polluted carrier gas containing pollutant material such as particulates, gases, vapors or combinations thereof wherein a stream of said polluted carrier gas is driven by blower means through a conduit and through a subsonic nozzle having an inlet communicating with said conduit, the steps of:

(a) continuously supplying pressurized compressible fluid to the inlet of a supersonic nozzle located in said conduit and expanding said compressible fluid through said supersonic nozzle to form a free supersonic jet of said compressible fluid directed from a position upstream of said subsonic nozzle through said stream of polluted carrier gas within said conduit and into the inlet of said subsonic nozzle to form in the interior of said subsonic nozzle a turbulent mixture of said polluted carrier gas with said compressible fluid, said supersonic jet expanding within said subsonic nozzle to hook up with the interior surface thereof to act as an ejector providing additional driving force to said turbulent mixture;

(b) forming a series of jet sprays of a first liquid in a first atomized condition disposed circumferentially about the free jet of compressible fluid emerging from said supersonic nozzle;

(c) further atomizing said first liquid into finely divided droplets by directing said jet sprays into the outer regions of said jet of compressible fluid as it emerges from said supersonic nozzle thus to supply to said turbulent mixture said finely divided droplets of further atomized liquid and to cause entrainment within said subsonic nozzle of at least a portion of said pollutant material in said droplets;

(d) discharging said mixture including said finely divided droplets from said subsonic nozzle to form a second free jet of said mixture and said finely divided droplets directed into a mixing tube;

(e) forming a series of jet sprays of a second liquid in a first atomized condition disposed circumferentially about said second jet as it emerges from said subsonic nozzle;

(f) further atomizing said second liquid into finely divided droplets by directing said jet sprays of said second liquid into said second jet as it emerges from said subsonic nozzle thus to form a further mixture containing the droplets of said second liquid within said mixing tube, the droplets of said first and second liquids combining and growing in size as they move through said mixing tube; and

(g) separating said droplets, thus grown in size, from the remainder of said carrier gas.

15. In apparatus for the purification of a polluted carrier gas containing pollutant material such as particulates, gases, vapors or combinations thereof the combination of:

(a) a conduit;

(b) a subsonic nozzle having an inlet communicating with said conduit;

(c) blower means for driving a stream of said carrier gas through said conduit and said subsonic nozzle;

(d) a compressible fluid ejector comprising a supersonic nozzle within said conduit upstream of the inlet of said subsonic nozzle;

(e) means for continuously supplying pressurized compressible fluid to the inlet of said supersonic nozzle and expanding said compressible fluid through said supersonic nozzle to form a free jet of said compressible fluid directed at supersonic velocity through said stream of gas and into the inlet of said subsonic nozzle, said free jet of compressible fluid expanding within said subsonic nozzle to hook up with the interior surface thereof to act as an ejector pump providing additional driving force to said stream of polluted gas;

(f) means for forming a series of jet sprays of a first liquid in a first atomized condition disposed circumferentially about and directed into the outer regions of said jet of compressible fluid emerging from said supersonic nozzle to further atomize said first liquid into finely divided droplets to form a turbulent mixture of said droplets with said polluted carrier gas and with said compressible fluid in said subsonic nozzle and to cause entrainment of at least a portion of said pollutant material in said finely divided droplets as said turbulent mixture moves through said subsonic nozzle and emerges therefrom to form a free jet of said mixture;

(g) a mixing tube having entry and exit ends communicating at its entry end with said conduit and positioned downstream of said subsonic nozzle, said free jet of said mixture being directed into the upstream entry end of said mixing tube;

(h) means for forming a series of jet sprays of a second liquid in a first atomized condition disposed circumferentially about said free jet of said mixture emerging from said subsonic nozzle to further atomize said second liquid into finely divided droplets and to mix said finely divided droplets of said second liquid with said mixture emerging from said subsonic nozzle, the droplets of said first and second liquids combining and growing in size as they move through said mixing tube; and

(i) means communicating with the exit and of said mixing tube for separating the droplets, thus grown in size, from the remainder of said carrier gas.

4,272,500

PROCESS FOR FORMING MULLITE

Carl L. Eggerding, Wappingers Falls; Frank Gonzales, Jr., Poughkeepsie, and Jerzy B. Niklewski, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 904,112, May 8, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,868

Int. Cl.[3] **C01B** *33/36;* **C04B** *35/64*

U.S. Cl. 423—327 **6 Claims**

1. A method of fabricating a multi-layer ceramic substrate for an integrated circuit semiconductor package formed of a ceramic material composed of a high percentage of high purity dense mullite comprising

forming a particulate ceramic mixture of (1) mullite in an amount in the range of 5 to 30% by weight, (2) Al_2O_3 in an amount such that it is from stoichiometric amount to excess as necessary to form the desired mullite composi-

tion percentage less the initially added mullite, and (3) aluminosilicate glass with an SiO_2 content in the range of 40 to 80% and including a significant amount of alkaline earth oxides, said glass in an amount to provide sufficient SiO_2 to combine with Al_2O_3 to form the desired mullite composition percentage,

combining the particulate mixture with an organic binder resin, and a solvent for the resin to form a liquid dispersion,

forming the liquid dispersion into a sheet,

drying the resultant sheet to remove the solvent from the resin to thereby form a ceramic green sheet,

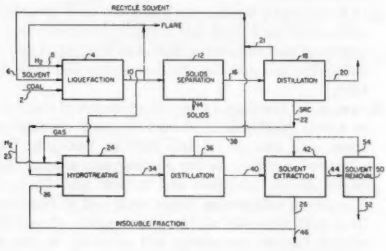
laminating a plurality of processed green sheets,

sintering the resultant laminated green sheet substrate at a temperature in the range of 1300° to 1600° C. for a time in the range of one-half to 24 hours to remove the binder resin and subsequently react the Al_2O_3 and SiO_2 in the glass to form dense mullite under the influence of the initially added mullite, the resultant substrate having 0% apparent porosity.

4,272,501
CARBON FIBERS FROM SRC PITCH

Eugene J. Greskovich, Allentown, and Edwin N. Givens, Bethlehem, both of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Mar. 3, 1980, Ser. No. 126,499
Int. Cl.[3] D01F *9/14*
U.S. Cl. 423—447.1 **4 Claims**



1. In a process for manufacturing a carbon fiber from a coal derived pitch, the improvement which comprises utilizing as said coal derived pitch a solvent refined coal containing hetero atoms and a soluble and insoluble portion therein which has been treated in accordance with the following process steps:

(a) hydrotreating the solvent refined coal in the presence of a catalyst under conditions suited to reduce the heteroatom content but insufficient to convert more than 25% of the solvent refined coal to a fraction having a boiling point less than 850° F.;

(b) distilling the fraction generated in the hydrotreating step (a) under conditions suitable for removing volatiles therefrom leaving a heavy fraction having a boiling point of greater than 850° F.;

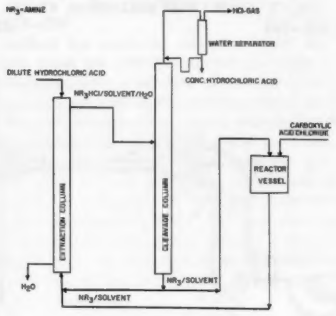
(c) subjecting the heavy fraction from step (b) to solvent extraction, said solvent extraction being effective for extracting the soluble portion of the solvent refined coal and reducing the total hetero atom content of the solubilized portion to less than 4% by weight; and

(d) recovering the mixture of the soluble portion and solvent from the solvent extraction step and removing the solvent therefrom to form an SRC pitch.

4,272,502
PROCESS FOR PREPARING GASEOUS HYDROGEN CHLORIDE FROM DILUTE AQUEOUS HYDROCHLORIC ACID

Willi Ziegenbein, Marl, and Ferdinand Von Praun, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,525
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921916
Int. Cl.[3] C01B *7/08*
U.S. Cl. 423—488 **11 Claims**



1. In a process for the production of gaseous hydrogen chloride by extraction of dilute aqueous hydrochloric acid with amines, comprising:

(a) aqueous hydrochloric acid with an extractant selected from the group consisting of a tertiary alkyl amine which contains 14 to 36 carbon atoms in the nitrogen-bound side chains, and among these at most one is a nitrogen-bound methyl group and at least one is an aliphatic group containing at least 6 carbon atoms, and wherein the acid constant K_a of the tertiary amine is smaller than 10^{-3}, or a mixture of said tertiary amine and an inert organic solvent which is immiscible with water and has a lower boiling point than said tertiary amine to form a two-phase condensate comprising a water phase and an organic phase containing aminohydrochlorides;

(b) separating said water phase from said organic phase;

(c) liberating gaseous hydrogen chloride from said separated organic phase by thermolysis of said aminohydrochlorides and formation of said tertiary amines and primary and secondary amine decomposition products of said tertiary amines; and

(d) recirculating said tertiary amines of step (c) to said extracting step (a); the improvement comprising:

(e) adding carboxylic acid chlorides in at least stoichiometric quantities to said primary and secondary amines to form their amides.

4,272,503
REDUCTANT COMPOSITION FOR TECHNETIUM-99M AND METHOD FOR MAKING TECHNETIUM-99M LABELLED LIGANDS

Leopoldo L. Camin, Lexington, and Maria P. Liteplo, Bedford, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Filed May 25, 1978, Ser. No. 909,385
Int. Cl.[3] A61K *49/00, 43/00*
U.S. Cl. 424—1 **62 Claims**

1. A product for reducing technetium comprising a substrate having attached thereto a reducing complex having sufficient redox potential to reduce technetium from the +7 oxidation state to an oxidation state at which said technetium forms a relatively stable complex with a ligand to be labelled.

4,272,504

ANTIBODY ADSORBED SUPPORT METHOD FOR CARCINOEMBRYONIC ANTIGEN ASSAY

Yung D. Kim, Lindenhurst; Joseph T. Tomita, and Jay R. Schenck, both of Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,592
Int. Cl.[3] G01N *33/48;* A61K *43/00;* G01T *1/00*
U.S. Cl. 424—1 7 Claims

1. A method for measuring the level of carcinoembryonic antigen in a test sample of plasma or sera, comprising the steps of:

(a) heat-treating the test sample to precipitate interfering protein and provide a supernatant containing carcinoembryonic antigen, and separating the supernatnant from the precipitated protein;

(b) incubating the supernatant with a plastic solid support having carcinoembryonic antigen antibody adsorbed thereto, thereby binding carcinoembryonic antigen from the supernatant to said antibody;

(c) separating the supernatant from and washing the plastic solid support to remove unbound carcinoembryonic antigen;

(d) incubating the plastic solid support with a solution of labeled carcinoembryonic antigen antibody, thereby binding said labeled antibody to the solid support;

(e) separating the solution from and wshing the plastic solid support to remove unbound labeled carcinoembryonic antigen antibody; and

(f) measuring the labeled carcinoembryonic antigen antibody either bound to the plastic solid support or in the solution.

4,272,505

COMPETITIVE BINDING ANALYSIS BY FLUORESCENCE

David S. Smith, London, England, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sep. 1, 1977, Ser. No. 830,009
Claims priority, application United Kingdom, Aug. 17, 1976, 38710/76
Int. Cl.[3] G01N *33/78, 33/58, 33/54, 21/64*
U.S. Cl. 424—8 6 Claims

1. A method of assaying a biological fluid sample for a thyroid hormone, comprising the steps of:

(a) forming a mixture of said fluid sample with a known amount of conjugate formed by labeling a thyroid hormone with a fluorophore, said fluorophore having a fluorescent level which is substantially suppressed by said thyroid hormone in said conjugate;

introducing into said mixture a binding substance which will equilibrate with both the thyroid hormone in said conjugate and said fluid sample, said binding substance sterically hindering the thyroid hormone of said conjugate from suppressing the fluorescence of said fluorophore;

(c) measuring the fluorescent level of said mixture; and

(d) calculating the amount of thyroid hormone in said sample by comparing the fluorescent level of said mixture with a standard fluorescent level.

6. A method of assaying a sample fluid for a thyroid hormone, which contains iodine, comprising

(a) forming a mixture of said sample with a known amount of a conjugate formed by labeling said thyroid hormone with a fluorophore;

(b) adding to said mixture a known amount of a binding substance for said thyroid hormone, said binding substance hindering the fluorescence inhibiting action of the iodine contained in said thyroid hormone;

(c) measuring the fluorescent level of the mixture;

(d) calculating the amount of thyroid hormone in said sample by comparing the fluorescent level with that of a standard.

4,272,506

PURIFICATION OF REAGENTS BY DISULFIDE IMMOBILIZATION

Moshe Schwarzberg, Hastings on Hudson, N.Y., assignor to Syva Company, Palo Alto, Calif.

Filed Aug. 31, 1979, Ser. No. 71,526
Int. Cl.[3] C07G *7/00;* C12Q *1/00;* G09K *11/07;* G01N *33/52*
U.S. Cl. 424—8 10 Claims

1. A method for purifying labeled poly(amino acid) ligands for use in immunoassays, where the poly(amino acid) ligands which are labeled are present in a mixture and said labeled poly(amino acid) ligands are prepared by covalently labeling said mixture of compounds which includes said poly(amino acid) ligands, wherein said ligand is a member of a specific binding pair consisting of ligand and its reciprocal antiligand and said labeled poly(amino acid) ligand is substantially enriched relative to other labeled compounds in said mixture; said method comprising: affixing to a displaceable disulfide substituted support a mercapto substituted member of said specific binding pair by displacement of said disulfide to form a specific binding pair member affixed to said support through a disulfide linkage;

binding to said affixed specific binding pair member labeled reciprocal member of said specific binding pair from a mixture of other labeled material;

removing from said support non-specifically bound label; and

cleaving said disulfide to obtain a labeled reagent useful in immunoassays.

9. In a method for performing an immunoassay involving labeled ligand and antiligand, the improvement which comprises employing as the labeled ligand a reagent prepared according to any of claims 1 or 6.

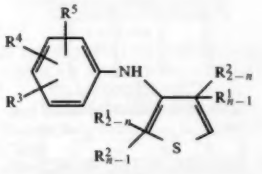
4,272,507

PHENYLAMINOTHIOPHENACETIC ACIDS, THEIR SYNTHESIS, COMPOSITIONS AND USE

Volker Figala, Allensbach, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,313
Claims priority, application Switzerland, May 24, 1978, 5687/78; Apr. 10, 1979, 3419/79
Int. Cl.[3] A61K *31/38;* C07D *333/24*
U.S. Cl. 424—275 13 Claims

1. A compound of the formula



wherein

R^1 is a hydrogen atom (—H), chloro, bromo or methyl;

R^2 is $—CH_2—COOH$ or $—CH_2—COOR^6$;

R^3 is —H, halo, lower alkyl, lower alkoxy or trifluoromethyl;

R^4 is one of the meanings of R^3;

R^5 is —H, halo or lower alkyl;

R^6 is benzyl, alkyl with from 1 to 5 carbon atoms or such alkyl which is substituted, any substituent of substituted alkyl being hydroxyl, hydroxy(lower)alkoxy or lower alkanoyloxy; and

n is a positive whole number of at most 2;

or a salt of one of the acids.

4,272,508

COSMETICS FOR TREATMENT OF HAIR AND SKIN

Jurgen Tamm, Martinistrasse 52, 2000 Hamburg 20, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,578
Int. Cl.[3] A61K *31/56*
U.S. Cl. 424—45 18 Claims

1. A cosmetic hair or skin composition selected from the group consisting of a hair cream, a hair oil, a skin cream, a skin oil, an aerosol and a shampoo useful in the treatment of individuals exhibiting excessively greasy hair, androgenic alopecia and/or acne comprising as an active ingredient from about 0.5 to 2.0% by weight based on the total weight of said cosmetic of 11-α-hydroxyprogesterone and/or a pharmaceutically compatible ester thereof in a pharmaceutically acceptable carrier.

4,272,509

PRECIPITATED SILICON DIOXIDE CLEANING AGENT AND DENTIFRICE COMPOSITION

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 943,884, Sep. 19, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,773
Int. Cl.[3] A61K *7/16;* C01B *33/12, 33/193*
U.S. Cl. 424—49 8 Claims

1. A synthetic precipitated silicon dioxide that provides a toothpaste clarity of 8 to 9, a radioactive dentin abrasion value of 360 to 401 and a % fluoride compatibility of 83–88 when incorporated into a visually clear toothpaste as an abrasive and cleaning agent, said silicon dioxide being characterized by wet cake moisture of from 46.1 to 50.9 , a refractive index ranging from 1.46 to 1.463, an oil absorption ranging from 50 to 59 cc/100 g, a surface area ranging from 354 to 374 m^2/g, a pour density ranging from 16.4 to 18.4 lb./cu.ft., and a pack density ranging from 34.7 to 37.2 lb./cu.ft.,

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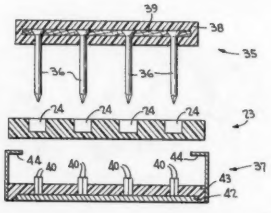
4,272,510

MAGNETIC ATTRACTION TRANSFER PROCESS FOR USE IN SOLID PHASE RADIOIMMUNOASSAYS AND IN OTHER ASSAY METHODS

Kendall O. Smith, 133 Trillium La., San Antonio, Tex. 78213, and Warren D. Gehle, 6815 Forest Haven, San Antonio, Tex. 78240

Filed Apr. 26, 1976, Ser. No. 680,506
Int. Cl.[3] B05D *3/14;* A61K *43/00*
U.S. Cl. 427—47 19 Claims



1. A process, for use in solid phase immunoassays, for simultaneously transferring a plurality of antigen-antibody adsorbent units from one location to another, comprising the steps of providing a plurality of units each comprising a core containing ferromagnetic material, said core covered with at least one coating for preventing chemical interactions between said core and aqueous chemical solutions and for adsorbing antigens or antibodies on the outer surface thereof, placing each of said units in a separate receptacle containing an appropriate liquid and then simultaneously removing said units from said receptacles by magnetic attraction by the use of a transfer device having a plurality of probes of magnetic material which are spatially oriented with respect to the receptacles.

4,272,511

COSMETIC COMPOSITIONS FOR TREATING HAIR

Christos Papantoniou, Montmorency, and Jean Mondet, Sevran, both of France, assignors to L'Oreal, Paris, France

Filed Jun. 20, 1979, Ser. No. 50,428
Claims priority, application France, Jun. 23, 1978, 78 18832; Feb. 8, 1979, 79 03260
Int. Cl.[3] A61K *7/06*
U.S. Cl. 424—47 12 Claims

1. A cosmetic composition containing in a suitable cosmetic vehicle at least one copolymer resulting from the copolymerization of:

(i) 3 to 20% by weight of N-vinylpyrrolidone,

(ii) 13 to 87% by weight of vinyl acetate,

(iii) 2 to 15% by weight of crotonic acid, and

(iv) 1 to 80% by weight of at least one fourth monomer selected from the group consisting of

(a) a vinyl ester of the formula

$$CH_2{=}CH{-}O{-}\overset{\overset{O}{\|}}{C}{-}R_1$$

wherein, R_1 represents a linear or branched alkyl having 2–21 carbon atoms,

(b) an allyl or methallyl ester of the formula

$$CH_2{=}\overset{\overset{R_3}{|}}{C}{-}CH_2{-}O{-}\overset{\overset{O}{\|}}{C}{-}R_2$$

wherein, R_2 represents a linear or branched alkyl having 1–21 carbon atoms and R_3 represents hydrogen or methyl,

(c) a vinyl ether of the formula

$$CH_2{=}CH{-}O{-}R_4$$

wherein, R_4 represents a linear or branched alkyl having 4–18 carbon atoms,

(d) an α-olefin of the formula

$$CH_2{=}CH{-}(CH_2)_nCH_3$$

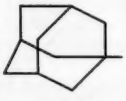
wherein, n is an integer from 3 to 15 inclusive, and

(e) a vinyl, allyl or methallyl ester of an α- or β-cyclic carboxylic acid having the formula

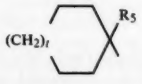
$$Cyc{-}(CH_2)_p{-}\overset{\overset{O}{\|}}{C}{-}O{-}(CH_2)_m{-}\overset{\overset{R'}{|}}{C}{=}CH_2$$

wherein, R′ represents hydrogen or methyl, m is 0 or 1, p is 0 or 1, when p is 0, Cyc represents a saturated or unsaturated mono- or polycyclic radical selected from

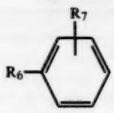
(i)



(ii)

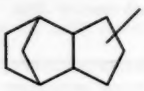


wherein, R_5 represents hydrogen or methyl and t is 0 or 1,



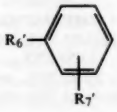
(iii)

wherein, R_6 is hydrogen, methyl, ethyl, tert.-butyl, ethoxy, or dodecoxy and R_7 is hydrogen, alkyl having 1–4 carbon atoms or alkoxy having 1–4 carbon atoms, or



(iv)

and when p is 1, Cyc represents



wherein, R'_6 and R'_7 have the same meanings as R_6 and R_7 given above.

4,272,512

ANTIGINGIVITIS COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,409
Int. Cl.[3] A61K *7/16, 31/19, 31/505*
U.S. Cl. 424—49 **9 Claims**

1. An oral composition adapted to inhibit symptoms of gingivitis comprising an oral vehicle and effective amounts of tranexamic acid and folic acid.

4,272,513

STABILIZED ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,156
Int. Cl.[3] A61K *7/16, 7/18*
U.S. Cl. 424—52 **7 Claims**

1. An oral composition for promoting oral hygiene containing an oral vehicle and, approximately by weight, 0.001 to 10.0% of tranexamic acid as antigingivitis agent, 0.005 to 2.0% of a fluorine-providing anticaries agent, and 0.01 to 3.0% of a flavoring mixture, which mixture consists essentially of, approximately by weight, 55 to 65% of methyl salicylate, 30 to 35% of menthol, 1 to 5% of eugenol, and 3 to 8% of cineol.

4,272,514

HIGH ABSORPTION BODY POWDER

Wayman R. Spence, Waco, Tex., assignor to Spenco Medical Corporation, Waco, Tex.

Filed Nov. 6, 1979, Ser. No. 91,391
Int. Cl.[3] A61K *7/26, 7/38*
U.S. Cl. 424—69 **13 Claims**

1. An improved high absorption body powder composition comprising a uniform mixture of a water-absorbent graft copolymer and an adjuvant sorbent, said copolymer having a particle size of less than about 150 mesh and characterized by a relatively high water absorption capacity, said adjuvant sorbent having a particle size of about 100 microns and less, and characterized by a low water sorbent capacity relative to said water absorbent graft copolymer, said body powder containing said polymer in an amount of from about 2% to about 50% by weight of said composition and said adjuvant sorbent in an amount of from about 50% to about 98% by weight of said composition.

4,272,515

HAIR CONDITIONING SHAMPOO

Keith Hofman, Isleworth; Brian A. Scott, Leeds, both of England, and Rudolf Vogl, Bad Segeberg, Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,110
Claims priority, application United Kingdom, Jun. 21, 1976, 25597/76
Int. Cl.[3] A61K *7/06*
U.S. Cl. 424—70 **8 Claims**

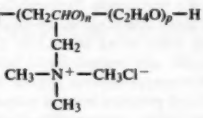
1. A hair conditioning shampoo consisting essentially of an aqueous solution of

A. 5% to 25% by weight of an alkyl ether sulphate detergent;

B. 0.2% to 0.8% by weight of cationic cellulosic resin having the general formula:

wherein

R_{cell} represents the residue of an anhydroglucose unit, Y is an integer of from 50 to 20,000 and wherein each R individually represents a substituent group of the following general formula:



where

m is a whole number of from 0 to 10, n is a whole number of from 0 to 3, and p is a whole number of from 0 to 10; and

C. an added amount S% by weight of a simple salt such that $(S/MW)\times N$ is from 0.03 to 0.21 where MW is the molecular weight of the salt and N is the number of ions produced by the salt in aqueous solution.

4,272,516

PROCESS FOR IMPROVING TRANSCUTANEOUS AND TRANSFOLLICULAR ABSORPTION OF COSMETIC COMPOSITIONS

Oreste Caldini, and Sandro Meucci, both of Florence, Italy, assignors to Societa Italo-Britannica-L. Manetti-H. Roberts Co., Florence, Italy

Continuation of Ser. No. 847,024, Oct. 31, 1977, abandoned. This application May 30, 1979, Ser. No. 43,819
Claims priority, application Italy, Nov. 8, 1976, 52071 A/76
Int. Cl.[3] A61K *7/06*
U.S. Cl. 424—70 **7 Claims**

1. A process of improving the transcutaneous and transfollicular absorption of a hair lotion having the following composition in parts by weight,

Nicotinyl alcohol: 0.5
Resorcinol: 0.5
Propylene glycol: 4.0
Polysorbate 80: 1.0
Polyethylene glycol 600: 2.0
Perfume: 1.0
Ethyl alcohol 95%: 47.5

De-ionised water: 31.5

comprising the steps of

(a) adding to said hair lotion 12.0 parts by weight of benzyl alcohol as an absorption activator, to form an improved hair lotion, and

(b) applying an effective amount of said improved hair lotion to the hair.

4,272,517

PERMANENT WAVING COMPOSITIONS

Koji Yoneda, Amagasaki; Takehisa Ohashi, Kobe; Masami Onishi, Akashi, and Hirotaka Fukumitsu, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1979, Ser. No. 40,969

Claims priority, application Japan, Dec. 25, 1978, 53/164712

Int. Cl.[3] **A61K** *7/09*

U.S. Cl. 424—72 **7 Claims**

1. In a permanent waving composition comprising an aqueous solution the improvement comprising including therein as the main ingredient, 3–20 percent by weight of N-carbamoylcysteine, said aqueous solution having a pH of 8–10.

4,272,518

PLASTIC WOUND BANDAGE

Daniel G. Moro, 7 Carriage Ct., Randolph, N.J. 07801; Gary A. Griffin, 2 Pilgrim Run, East Brunswick, N.J. 08816, and Mark J. D'Andrea, 70 C Zion Montgomery Rd., Neshanic Station, N.J. 08553

Filed Jul. 10, 1979, Ser. No. 56,183

Int. Cl.[3] **A61K** *31/78*

U.S. Cl. 424—81 **34 Claims**

1. A process of treating a wound comprising applying to the surface of the wound a settable, non-toxic paste consisting essentially of a particulate, hydrophilic, water-swellable polymer and an inert, non-toxic water-miscible organic liquid having a boiling point above about 120° C. capable of forming a paste therewith, said organic liquid being polyethylene glycol or oxyethyleneoxypropylene glycol of 200–2000 molecular weight and said polymer being a polymer of hydroxy(C_2–C_4-alkyl) methacrylate, hydroxy(C_2–C_4alkyl) acrylate, hydroxy(C_2–C_4alkoxyC_2–C_4alkyl)methacrylate, hydroxy(C_2–C_4alkoxyC_2–C_4alkyl)acrylate, alkoxy(C_2–C_4alkoxyC_2–C_4alkyl) methacrylate, alkoxy(C_2–C_4alkoxyC_2–C_4alkyl) acrylate, N-(C_1–C_4alkyl)acrylamide, N-(C_1–C_4alkyl)methacrylamide, N,N-di(C_1–C_4-alkyl)acrylamide, N,N-(di(C_1–C_4alkyl)methacrylamide, vicinal-epoxy(C_1–C_4alkyl methacrylate, or vicinal-epoxy(C_1–C_4alkyl)acrylate, said paste having a setting time of up to about one hour and a working time sufficient to apply the paste to the said wound surface, the polymer of said paste in set condition being water-insoluble, the ratio of polymer to organic liquid in the paste being from above about 0.8:1 to about 1.4:1 by weight, whereby there is formed a non-tacky, homogeneous, occlusive film on the surface of the wound.

4,272,519

COSMETIC LOTION FORMULATION

Anne M. Herrold, Brownsburg, and Ovidio Vargas, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 20, 1980, Ser. No. 179,629

Int. Cl.[3] **A61K** *7/02*

U.S. Cl. 424—83 **1 Claim**

1. A skin lotion formulation consisting essentially of, in percent by weight:

Ingredients	Percent
deionized water	69.35
xanthan gum	0.15
propylene glycol	5.00
polyoxyethylene (30) stearate	1.70

-continued

Ingredients	Percent
methyl p-hydroxybenzoate	0.20
imidazolidinyl urea	0.30
polyphenylmethylsiloxane	3.00
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	1.00
glyceryl monostearate, neutral non-emulsifying	2.00
propyl p-hydroxybenzoate	0.20
sorbitan monostearate	2.00
ethylene glycol monostearate	1.00
lanolin oil	2.50
isopropyl myristate	3.00
squalane	8.50
fragrance	0.10

4,272,520

COMPOSITIONS COMPRISING N-TETRADECYL FORMATE AND THEIR USE IN CONTROLLING INSECTS

Agis F. Kydonieus, New York, N.Y., and Roger L. Kitterman, Tonopah, Ariz., assignors to Herculite Products, Inc., New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,329

Int. Cl.[3] **A01N** *25/00*

U.S. Cl. 424—84 **5 Claims**

1. A method for controlling insects of the Heliothis complex species by disruption of the reproductive cycle of said insects comprising substantially uniformly distributing, over an area containing crops which are subject to infestation by said insects, n-tetradecyl formate, the amount of n-tetradecyl formate being sufficient to impede moths in finding female moths thereby interrupting mating of said insects.

4,272,521

PURIFIED IMMUNE SERUM GLOBULIN

Timothy R. Zuffi, Kensington, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jul. 16, 1979, Ser. No. 57,880

Int. Cl.[3] **A61K** *39/395, 39/00*

U.S. Cl. 424—85 **4 Claims**

1. A method of removing Factor XII from an immune serum globulin preparation which comprises contacting the preparation with an ion exchange material at a pH of ≧7.2 under conditions sufficient to assure removal of substantially all of the Factor XII.

4,272,522

METHOD FOR STIMULATING PHAGOCYTIC ACTIVITY AND SYNERGISTIC COMPOSITIONS THEREFOR

Endre A. Balazs, 3333 H. Hudson Pkwy., Riverdale, N.Y. 10463

Filed Oct. 15, 1979, Ser. No. 84,615

Int. Cl.[3] **A61K** *37/62*

U.S. Cl. 424—94 **6 Claims**

1. A composition for stimulating phagocytosis, said composition comprising a physiological saline solution containing muramidase an a soluble salt of hyaluronic acid, having a molecular weight of at least about 430,000, both in amounts sufficient so that when about 1–2 ml. thereof are subcutaneously or intramuscularly injected in a mammal the concentration of each in the blood system of said mammal is about 10–50 ug/ml.

4,272,523

FRACTIONATING CITRATE-STABILIZED PLASMA

Ronald Kotitschke, and Wolfgang Stephan, both of Dreieich, Fed. Rep. of Germany, assignors to Biotest Serum Institut GmbH, Frankfurt-Niederrad, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 875,489, Feb. 6, 1978, Pat. No. 4,170,590, which is a continuation-in-part of Ser. No. 639,960, Dec. 11, 1975, Pat. No. 4,081,431. This application Sep. 17, 1979, Ser. No. 75,867

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902158

The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.

Int. Cl.[3] A61K *35/14;* C07G *7/00*

U.S. Cl. 424—101 16 Claims

1. A method for obtaining fibrinogen, a prothrombin complex containing coagulation factors II, VII, IX and X, antithrombin III, and a solution of stable serum proteins from a citrate-stabilized blood plasma comprising contacting the plasma with colloidal silica of a specific surface of about 50 to 400 m^2/g, about 50 to 400 mg of silica being employed per g of plasma protein, thereby to adsorb the fibrinogen from the plasma, separating the silica and adsorbed fibrinogen from the residual protein solution, subjecting the residual protein solution to ultrafiltration or dialysis so as to remove citrate and calcium ions therefrom, contacting the residual protein solution with an adsorbent for the prothrombin complex and antithrombin III, and separating the adsorbent with material adsorbed thereon from the residual solution of stable serum proteins.

4,272,524

N-ACYL-MURAMYL PEPTIDE DERIVATIVES HAVING ANTI-INFECTIOUS INFECTIONS PROPERTIES

Louis Chedid; Jean Choay, both of Paris; Edgar Lederer, Sceaux; Pierre Lefrancier, Bures sur Yvette; Monique Parant, and Francine Parant, both of Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine-Cedex, France

Continuation-in-part of Ser. No. 516,991, Oct. 22, 1974, Pat. No. 4,186,194. This application Nov. 1, 1977, Ser. No. 847,673

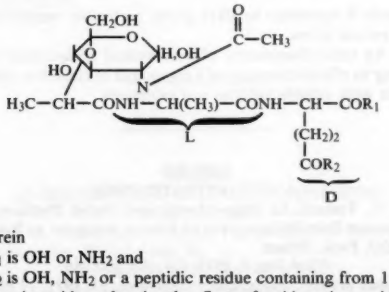
Claims priority, application United Kingdom, Nov. 2, 1976, 45597/76

The portion of the term of this patent subsequent to Jan. 29, 1997, has been disclaimed.

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 25 Claims

1. The method of controlling infection in a host by causing bactericidal or bacteriostatic activity in the host which comprises administering an effective dose of a compound which is effective to control Klebsiella of the following formula:



wherein

R_1 is OH or NH_2 and

R_2 is OH, NH_2 or a peptidic residue containing from 1 to 2 aminoacids, wherein the first of said amino acids is L—Ala or L—Lys, with the proviso that R_1 and R_2 are not simultaneously NH_2.

4,272,525

DERIVATIVES OF POLYENE MACROLIDE ANTIBIOTICS CONTAINING AN AMINO SUGAR MOIETY, PROCESS FOR THE PREPARATION THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

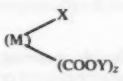
John J. Wright, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 953,824, Oct. 23, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,011

Int. Cl.[3] A61K *37/00, 31/70;* C07C *103/52;* C07H *19/16*

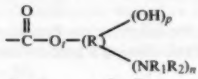
U.S. Cl. 424—177 30 Claims

1. Derivatives of polyene macrolide antibiotics of the general formula

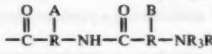


(I)

wherein M is a polyene macrolide antibiotic moiety containing an amino sugar moiety, the amino group of which is substituted by X, wherein X is

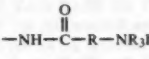


(II),



(III),

—R_5 or hydrogen, wherein A and B independently of each other are hydrogen or NR_3R_4 or one of A and B is hydrogen and the other is



R is a saturated hydrocarbon group having 1 to 10 carbon atoms; R_1 and R_2 independently of each other are hydrogen or a straight chain alkyl group having 1 to 3 carbon atoms or one of R_1 and R_2 is hydrogen and the other a straight chain alkyl group having 1 to 3 carbon atoms substituted by an NH_2 group; R_3 and R_4 independently of each other are hydrogen or a straight chain alkyl group containing 1 to 3 carbon atoms; R_5 is histidyl, tyrosyl, tryptophyl, arginyl, phenylalanyl or prolyl or an (α)-N-[$(NH_2)_m$-(R)-CO]— derivative of histidyl, tyrosyl, tryptophyl, phenylalanyl or prolyl; m is 1 or 2; n is 1 to 3, t is zero or 1, and when t is zero p is zero to 4 and when t is 1 p is zero; with the proviso that not more than one hetero atom is attached to the same carbon atom in any one of R, R_1 and R_2 and that in those compounds containing more than one R-group, these R-groups may be of the same or different chain length; z is zero or 1, and Y is hydrogen, an alkyl group containing 1 to 10 carbon atoms, allyl, propargyl, benzyl or phenylpropargyl, with the proviso that, when X is hydrogen, z must be 1 and Y must be allyl, propargyl, benzyl or phenylpropargyl; and the pharmaceutically acceptable acid addition salts of all the foregoing compounds.

29. The method for treating fungal infections which comprises administering to a mammal infected with a susceptible fungus, a non-toxic, fungicidally effective amount of a compound of claim 1.

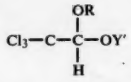
30. A pharmaceutical composition comprising a non-toxic, fungicidally effective amount of a compound of claim 1 together with a non-toxic, pharmaceutically acceptable carrier.

4,272,526
DERIVATIVES OF CHLORAL

David E. Simpkins, Benfleet, and John B. O. Taylor, Gidea Park, both of England, assignors to Macarthys Pharmaceuticals Limited, Romford, England

Filed May 8, 1979, Ser. No. 37,056
Claims priority, application United Kingdom, Jul. 11, 1978, 29451/78
Int. Cl.[3] A61K *31/715;* C07H *1/00*
U.S. Cl. 424—180 11 Claims

1. A pharmaceutical hypnotic composition comprising a chloral derivative having the general formula:



in which Y' is a polysaccharide consisting of a chain of anhydroglucose, substituted anhydroglucose or uronic acid units as substituent groups and in which R is selected from —$COCH_2OH$, —$[(CH_2)_nO]_x$—H in which n is 2 to 5 and x is 1 to 7; —CH_2OSO_2X' or —CH_2COOX' in which X' is NH_4 or an alkaline earth metal cation, —$(CCH_2)_nH$ where n is 1 to 7, —$(CH_2)_n$ $(OH)_xY$ where Y is —H or —CH_3 n is 1 to 7, x is 1 to 12 and the —OH groups are attached to the carbon atoms and wherein when Y^1 is a chain of unmodified anhydroglucose units, those units have the following configurations:

α-D-glucopyranosyl units having a predominantly 1–4 linkage.

β-D-glucopyranosyl units having a predominantly 1–4 linkage or

β-D-glucopyranosyl units having a predominently 1–4 linkage when C_6 is a carboxylic acid group; and a pharmaceutically acceptable excipient therefor.

4,272,527
MEDICINAL PREPARATION CONTAINING THE EXTRACT OF PEAT WAX RESIN

Peter I. Belkevich, ulitsa Kulman, 15, kv. 55; Solomon J. Buslovich, ulitsa Volgogradskaya, 27, kv. 49; Elena F. Dolidovich, ulitsa D. Serdicha, 3, kv. 58; Fanya L. Kaganovich, ulitsa Kozlova, 8/1, kv. 88; Oktyabr P. Komov, ulitsa Ya. Kolasa, 27, korpus 2, kv. 30, and Ljudmila P. Timofeeva, prospekt Lenina, 40, kv. 34, all of Minsk, U.S.S.R.

Filed Feb. 26, 1979, Ser. No. 15,200
Int. Cl.[3] A61K *35/78*
U.S. Cl. 424—195 2 Claims

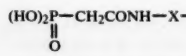
1. A method for the treatment of skin diseases selected from the group consisting of eczema and psoriasis, comprising the topical administration of a medicinal preparation containing a therapeutically effective amount of an ethanol extract of peat wax resin in conjunction with a pharmaceutically acceptable ointment vehicle.

4,272,528
PHOSPHONOACETYL AMINOACIDS

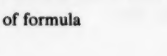
Anne M. Von Esch, North Chicago; Alford M. Thomas, Wadsworth; John S. Fairgrieve, Lake Villa, and John H. Seely, Lake Forest, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 14, 1980, Ser. No. 178,191
Int. Cl.[3] A61K *31/60;* C07F *9/38*
U.S. Cl. 424—211 21 Claims

1. A compund of the formula

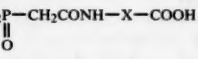


wherein X stands for >$CHCH_3$, —CH_2—, —CH_2CH_2—, >$CHCH_2CH(CH_3)_2$, >$CHCH_2CONH_2$ or

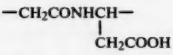


and the nontoxic salts thereof.

15. A method for treating herpes simplex virus infection in a warm-blooded animal which comprises administering to an animal so infected, an effective amount to combat said virus of a composition containing a compound of the formula



wherein X stands for >$CHCH_3$, —CH_2—, —CH_2CH_2—, >$CHCH_2CH(CH_3)_2$, >$CHCH_2CONH_2$ or



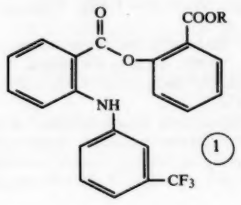
and the nontoxic salts thereof.

4,272,529
O-ALCOXYCARBONYLPHENYL ESTERS OF ANTHRANILIC ACID WITH THERAPEUTICAL ACTIVITY, METHOD FOR THEIR PREPARATION AND RELATED PHARMACEUTICAL COMPOSITION

Cesare Casagrande, Arese, and Giorgio Ferrari, Milan, both of Italy, assignors to Simes S.p.A., Milan, Italy

Filed Apr. 3, 1980, Ser. No. 137,295
Claims priority, application Italy, Jul. 31, 1979, 24806 A/79
Int. Cl.[3] A61K *31/60;* C07C *101/54*
U.S. Cl. 424—230 7 Claims

1. N-m-trifluoromethylphenylanthranilate of O-alcoxy-carbonylphenyl, having the formula (1)



wherein R represents an alkyl group, preferably comprising 1 to 4 carbon atoms.

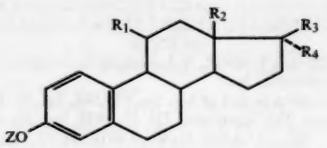
4. An anti-inflammatory pharmaceutical composition containing an effective amount of a compound of claim 1 in combination with suitable vehicles and excipients.

4,272,530
$\Delta^{1,3,5(10)}$-ESTRATRIENES

Jean G. Teutsch, Le Blanc-Mesnil, and Daniel Philibert, La Varenne Saint-Hilaire, both of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 6, 1978, Ser. No. 867,486
Claims priority, application France, Jan. 13, 1977, 77 00859
Int. Cl.[3] A61K *31/58, 31/56;* C07J *1/00, 3/00*
U.S. Cl. 424—238 35 Claims

1. A compound of formula

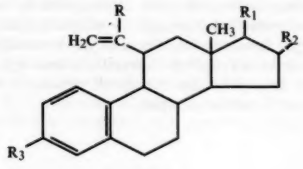


wherein R_1 is selected from the group consisting of unsaturated alkyl of 2 to 8 carbon atoms optionally substituted with a member selected from the group consisting of alkylthio of 1 to 4 carbon atoms and halogens, aryl of 6 to 12 carbon atoms and aralkyl of 7 to 13 carbons atoms optionally substituted with at least one member of the group consisting of alkoxy and alkylthio of 1 to 4 carbon atoms, halogens and $-CF_3$, thienyl, isothienyl and furyl, R_2 is alkyl of 1 to 4 carbon atoms, Z is selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms and aralkyl of 7 to 9 carbon atoms, R_3 is selected from the group consisting of hydrogen, hydroxy, acyl of an organic carboxylic acid of 1 to 18 carbon atoms and acyloxy of an organic carboxylic acid of 1 to 18 carbon atoms and R_4 is selected from the group consisting of hydrogen, hydroxy, alkyl and alkoxy of 1 to 8 carbon atoms, acyloxy of an organic carboxylic acid of 1 to 8 carbon atoms and alkenyl and alkynyl of 2 to 8 carbon atoms, with the proviso that R_1 is not allyl when Z is hydrogen, R_2 is methyl, R_3 is hydroxy and R_4 is hydrogen.

17. An estrogenic composition comprising an estrogenically effective amount of at least one compound of claim **1** and an inert pharmaceutical carrier.

19. A method of inducing estrogenic activity in warm-blooded animals comprising administering to warm-blooded animals an estrogenically effective amount of at least one compound of claim **1**.

35.



wherein R=hydrogen or methyl,

R_1=Hydroxy, acyloxy of an organic carboxylic acid of 1 to 18 carbons;

R_2=Hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbons and alkynyl of 2 to 4 carbons and;

R_3=Hydroxy, alkoxy of 1 to 4 carbons and aralkoxy of 7 to 9 carbons.

4,272,531

3,3 -BIS-METHYLENE-1,3'-BENZO-THIAZINE COMPOUNDS

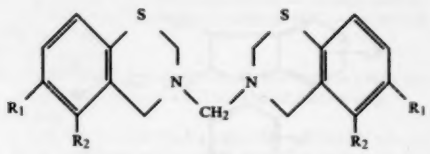
Robert M. DeMarinis, Ardmore, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Jun. 26, 1980, Ser. No. 163,123

Int. Cl.[3] **C07D** *417/06;* **A61K** *31/54*

U.S. Cl. 424—246 **12 Claims**

1. A chemical compound of the formula:



in which:

R_1 is chloro or sulfamoyl; and R_2 is chloro or hydrogen; or

a pharmaceutically acceptable acid addition salt thereof.

10. A method of inhibiting phenylethanolamine N-methyltransferase which comprises administering to an animal requiring said inhibition an amount sufficient to produce said inhibition of a chemical compound as defined in claim **1**.

4,272,532

5-(OPTIONALLY SUBSTITUTED PHENYL)-6H-1,3,4-THIADIAZINE-2-AMINES

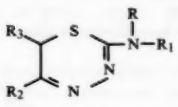
Winton D. Jones, Cincinnati, and Francis P. Miller, Loveland, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Sep. 4, 1979, Ser. No. 71,954

Int. Cl.[3] **A61K** *31/54*

U.S. Cl. 424—246 **7 Claims**

1. A method of inducing sedation in a patient which comprises administering to a patient in which sedation is desired an amount effective for inducing sedation of a compound of the formula



wherein

R is H, or C_{1-5} or 7-straight or branched chain alkyl;

R_1 is H, C_{1-5} or 7-straight or branched chain alkyl or allyl;

R_2 is phenyl or phenyl substituted with F, Cl, Br, No_2, C_{1-5} straight or branched chain alkyl, C_{1-5} straight or branched chain alkoxy, 2,4-di-Cl, 2,4-di-F, 2,4-di-Br with the proviso that when the phenyl group is monosubstituted with F, the F atom is not in the o-position; and

R_3 is H or C_{1-5} straight or branched chain alkyl, with the proviso that when R_3 is straight or branched chain alkyl, R_2 is unsubstituted phenyl; or

a pharmaceutically acceptable acid addition salt thereof.

4,272,533

N-PHENYLINDOLINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Fulvio Gadient, Birsfelden, and Rudolf Süess, Bettingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

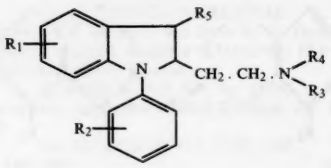
Filed Aug. 27, 1979, Ser. No. 70,266

Claims priority, application Switzerland, Aug. 30, 1978, 9155/78

Int. Cl.[3] **A61K** *31/40;* **C07D** *209/14*

U.S. Cl. 424—248.4 **12 Claims**

1. A compound of formula I



wherein

R_1 and R_2 independently are hydrogen, halogen of atomic number from 9 to 35, alkoxy (C_{1-4}) or alkyl (C_{1-4}),

R_3 and R_4 either are independently hydrogen or alkyl (C_{1-6}), or together with the nitrogen atom to which they are bound form a pyrrolidino, piperidino, perhydrazepino, morpholino or 4-alkyl(C_{1-4})piperazinyl radical, and

R_5 is hydrogen or alkyl(C_{1-4}),

or a pharmaceutically acceptable acid addition salt thereof.

2. A pharmaceutical composition comprising an anti-diabetic or anti-obesity effective amount of a compound of claim 1 in association with a pharmaceutical diluent or carrier.

4,272,534
2-(PYRID-2-YL)TETRAHYDROTHIOPHENE DERIVATIVES

Jean-Claude Aloup, Villeneuve-le-Roi; Jean Bouchaudon, Morsang-sur-Orge; Daniel Farge, Thiais, and Claude James, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

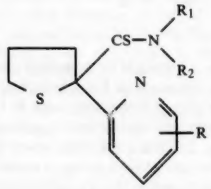
Filed Mar. 26, 1980, Ser. No. 134,311

Claims priority, application France, Mar. 30, 1979, 79 08032; Jan. 24, 1980, 80 01499; Jan. 24, 1980, 80 01500

Int. Cl.[3] **A61K** *31/44, 31/495;* **C07D** *413/14*

U.S. Cl. 424—248.51 **11 Claims**

1. A 2-(pyrid-2-yl)tetrahydrothiophene compound of the formula:



wherein R represents hydrogen or alkyl of 1 through 4 carbon atoms, and R_1 and R_2 represent hydrogen or alkyl of 1 through 15 carbon atoms, or alkyl of 1 through 15 carbon atoms substituted by one substituent selected from (i) hydroxy, (ii) alkylamino in which the alkyl radical is of 1 through 4 carbon atoms, (iii) dialkylamino in which the alkyl radicals are of 1 through 4 carbon atoms, (iv) phenyl, (v) carboxy, and (vi) alkoxycarbonyl in which the alkoxy radical is of 1 through 4 carbon atoms, or R_1 and R_2 together with the nitrogen atom to which they are attached represent piperidino, morpholino, or piperazin-1-yl which may be substituted on the 4-position nitrogen atom by alkyl of 1 to 4 carbon atoms, and pharmaceutically acceptable acid addition salts thereof or pharmaceutically acceptable metal salts or salts with pharmaceutically acceptable nitrogen-containing bases.

10. A pharmaceutical composition which comprises an effective amount of a 2-(pyrid-2-yl)tetrahydrothiophene compound or a pharmaceutically acceptable salt thereof as claimed in claim 1, in association with at least one compatible pharmaceutically acceptable carrier or adjuvant.

4,272,535
2,4-[1H,3H,5H]-(1)-BENZOPYRANO-[2,3-d]-PYRIMIDINEDIONES AND THEIR USE AS ANTI-ALLERGY AGENTS

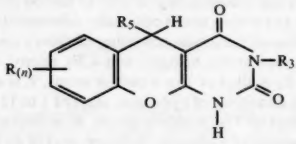
David J. Blythin, Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 929,598, Jul. 31, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,559

Int. Cl.[3] **A61K** *31/505;* **C07D** *491/052*

U.S. Cl. 424—248.54 **22 Claims**

1. A compound of the formula



(I)

wherein each of R_3 and R_5 is hydrogen or loweralkyl, n is an integer from one to four and R is hydrogen, loweralkyl, lowercycloalkyl, acyloxyloweralkyl, hydroxyloweralkyl, loweralkoxyloweralkyl, nitro, halogeno, halologeno, halohydroxy, loweralkoxy, acylaminoloweralkyl, mono- or diloweralkylaminoloweralkyl, alkanoyloxy, carboxy, loweralkoxycarbonyl, acyl, formyl, cyano or a carboxamido moiety of the structure

wherein A is straight or branched chain alkyl with up to 12 carbon atoms, lowercycloalkyl, lowercycloalkylloweralkyl, loweralkoxyloweralkyl, hydroxyloweralkyl, fluoroloweralkyl, loweralkenyl, loweralkylthioloweralkyl, loweralkylsulfoxyloweralkyl, loweralkylsulfonylloweralkyl, thiazolyl, oxazolyl, thiadiazolyl, methylthiadiazolyl, furyl, pyrazolyl, tetrazolyl, methyltetrazolyl, or the grouping

wherein E is a straight or branched chain or cyclic loweralkylene, and Q is hydroxy, loweralkoxy, amino or mono- or diloweralkylamino; or the grouping —E—R_8, wherein E is as defined above or E is as defined above and E is substituted by hydroxy, by phenyl, or by both hydroxy and phenyl, R_8 is phenyl, thiazolyl, oxazolyl, thiadiazolyl, methylthiadiazolyl, tetrazolyl, methyltetrazolyl, furyl, pyridyl, methylpyridyl or piperidinyl; and B is hydrogen, loweralkyl; lowercycloalkyl, lowercycloalkylloweralkyl, or loweralkenyl; or A and B, when taken together with the nitrogen atom to which they are attached, represent imidazolyl, morpholinyl, pyrrolidinyl, piperidinyl or piperazinyl said heterocyclic rings being optionally substituted by hydroxy, loweralkyl or hydroxyloweralkyl; and pharmaceutically acceptable salts thereof.

21. A method for effecting an anti-allergic reaction which comprises administering an effective amount of a compound as claimed in claim 1 to an animal.

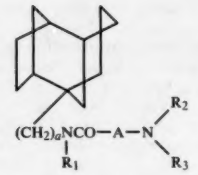
22. An anti-allergic pharmaceutical composition containing as active ingredient an effective amount of at least one compound as claimed in claim 1 together with a pharmaceutical carrier or excipient.

4,272,536
NOVEL TRICYCLOUNDECANE AMINOACID AMIDE

Yoshiaki Inamoto, Utsunomiya; Motoyoshi Osugi, and Eiji Kashihara, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo and Sumitomo Chemical Industries Ltd., Osaka, both of, Japan

Filed Dec. 12, 1979, Ser. No. 102,674
Claims priority, application Japan, Dec. 21, 1978, 53-159541
Int. Cl.[3] A61K *31/16;* C07C *87/40, 103/00*
U.S. Cl. 424—248.54 8 Claims

1. A compound having the formula



(I)

wherein a is 0 or 1, R_1 is hydrogen or lower alkyl having from 1 to 4 carbon atoms, A is lower alkylene having from 1 to 4 carbon atoms or lower alkylidene having from 2 to 4 carbon atoms, and R_2 and R_3, which can be the same or different, are hydrogen, lower alkyl having from 1 to 4 carbon atoms, cycloalkyl having 5 or 6 carbon atoms, benzyl or benzyl substituted on the benzene ring with alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 3 carbon atoms, chloro, bromo or nitro, or

form a saturated heterocyclic ring selected from the group consisting of pyrrolidine, piperidine and morpholine, and pharmacologically acceptable acid addition salt thereof.

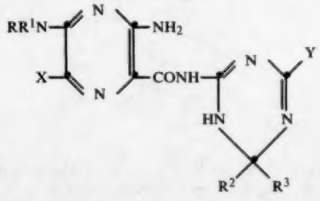
7. A pharmaceutical composition which comprises as an active ingredient a pharmaceutically effective amount of at least one of the compounds as claimed in claim 1 and at least one pharmceutically acceptable inert carrier or diluent.

4,272,537
3-AMINO-5-SUBSTITUTED-6-HALO-N-(4,4-DISUBSTITUTED-6-SUBSTITUTED-1,3,5-TRIAZIN-2-YL)-2-PYRAZINECARBOXAMIDES

Otto W. Woltersdorf, Jr., Chalfont; S. Jane deSolms, Norristown, and Robert L. Smith, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 2, 1980, Ser. No. 165,313
Int. Cl.[3] C07D *403/12;* A61K *31/495, 31/53*
U.S. Cl. 424—249 11 Claims

1. A compound of the formula or the tautomeric form thereof

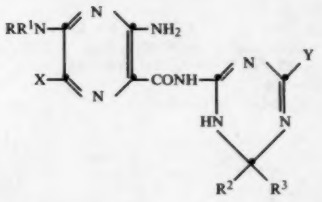


wherein

R is hydrogen, C_{1-5} alkyl, C_{2-5} alkenyl or C_{3-6} cycloalkyl;
R^1 is hydrogen, C_{1-5} alkyl, C_{2-5} alkenyl or C_{3-6} cycloalkyl;
R^2 is C_{1-5} alkyl;
R^3 is C_{1-5} alkyl;
R^2 and R^3 can be joined with the carbon atom to which they are attached to form a 3–7 membered carbon ring;
X is halo;
Y is OH, SH, C_{1-5} alkoxy, C_{1-5} alkylthio and NR^4R^5 wherein R^4 is hydrogen or C_{1-5} alkyl and R^5 is hydrogen, C_{1-5} alkyl, CN, $CONH_2$,

NO_2 or NH_2 and the pharmaceutical acid addition salts thereof.

10. A method of treating edema or hypertension which comprises administering to a patient in need of such treatment a pharmaceutically effective amount of a compound of the formula:



wherein

R is hydrogen, C_{1-5} alkyl, C_{2-5} alkenyl or C_{3-6} cycloalkyl;
R^1 is hydrogen, C_{1-5} alkyl, C_{2-5} alkenyl or C_{3-6} cycloalkyl;
R^2 is C_{1-5} alkyl;
R^3 is C_{1-5} alkyl;
R^2 and R^3 can be joined with the carbon atom to which they are attached to form a 3–7 membered carbon ring;
X is halo;
Y is OH, SH, C_{1-5} alkoxy, C_{1-5} alkylthio and NR^4R^5 wherein R^4 is hydrogen or C_{1-5} alkyl and R^5 is hydrogen, C_{1-5} alkyl, CN, $CONH_2$,

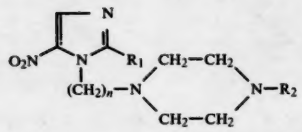
NO_2 or NH_2 and the pharmaceutical acid addition salts thereof.

4,272,538
5-NITRO-IMIDAZOLE WITH ANTIPROTOZOIC ACTIVITY

Francesco Makovec; Paolo Senin, both of Monza, and Luigi Rovati, S. Fruttuoso di Monza, all of Italy, assignors to Rotta Research Laboratorium S.p.A., San Fruttuoso de Monza, Italy

Filed May 18, 1979, Ser. No. 40,369
Claims priority, application Italy, May 29, 1978, 68223 A/78
Int. Cl.[3] A61K *31/495;* C07D *403/06*
U.S. Cl. 424—250 10 Claims

1. A compound selected from the group consisting of compounds having the formula:



in which R_1 is hydrogen, methyl, ethyl or phenyl, n is 2 or 3, and R_2 is methyl, ethyl, carboxymethyl or carboxyethyl, and the pharmaceutically acceptable acid addition salts thereof.

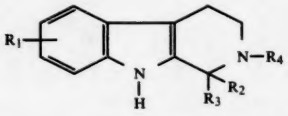
7. An anti-protozoic pharmaceutical preparation comprising a compound according to claim 1, as the active ingredient, and a pharmaceutically acceptable carrier or diluent.

4,272,539
PYRIDOINDOLE DERIVATIVES

Gabor I. Koletar, Berkeley Heights, N.J.; Jonathan R. Frost, Palaiseau, France; Regis Dupont, Paris, France; Patrick Lardenois, Bourg la Reine, France; Claude Morel, Massy, France, and Henry Najer, Paris, France, assignors to Synthelabo, Paris, France

Filed Jan. 15, 1980, Ser. No. 112,212
Claims priority, application France, Apr. 26, 1979, 79 10654
Int. Cl.[3] C07D *471/04;* **A61K** *31/435*
U.S. Cl. 424—256 **4 Claims**

1. A compound of the formula



wherein

R_1=H, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, or CF_3;

R_2=$CONHR_5$ in which R_5 is C_{1-4} alkyl, C_{3-6} cycloalkyl or benzyl;

R_3=H or CH_3; and

R_4=H, CH_3 or CH_3CO;

or a pharmaceutically acceptable salt thereof.

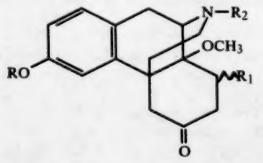
4. A method of treating a patient for anoxia, comprising administering to the patient a therapeutically effective dose of a compound as claimed in claim 1.

4,272,540
14-METHOXYMORPHINAN-6-ONE COMPOUNDS AND THERAPEUTIC METHODS OF TREATING PAIN AND DRUG DEPENDENCE WITH THEM

Raj K. Razdan, Belmont, and Anil C. Ghosh, Lexington, both of Mass., assignors to SISA, Incorporated, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,733
Int. Cl.[3] A61K *31/485;* **C07D** *221/28*
U.S. Cl. 424—260 **46 Claims**

1. 14-methoxy substituted 3-hydroxy or 3-methoxy-6-one morphinans characterized by the formula:



where R is H or methyl; R_1 is H, α-methyl or β-methyl, and R_2 is cyclobutylmethyl, cyclopropylmethyl, tetrahydrofurfuryl or dimethylallyl, provided that when R_2 is dimethylallyl, R_1 is methyl.

32. A therapeutic method for treating pain in an individual for whom such therapy is indicated, which method comprises administering to the individual an effective analgesic amount of a compound selected from the group of 17-cyclobutylmethyl-3,14-dimethoxymorphinan-6-one, 17-cyclobutylmethyl-3-hydroxy-14-methoxymorphinan-6-one, 17-tetrahydrofurfuryl-3-hydroxy-14-methoxymorphinan-6-one, 17-tetrahydrofurfuryl-3,14-dimethoxymorphinan-6-one, 17-dimethylallyl-3-hydroxy-14-methoxy-8α-methylmorphinan-6-one, 17-tetrahydrofurfuryl-3,14-dimethoxy-8α-methylmorphinan-6-one or a pharmacological acceptable, non-toxic acid addition salt thereof.

34. A therapeutic method for treating drug dependence in an individual for whom such therapy is indicated, which method comprises administering to the individual an effective narcotic antagonist amount of a compound selected from the group of 17-cyclopropylmethyl-3,14-dimethoxy-8β-methylmophinan-6-one; 17-cyclopropylmethyl-3-hydroxy-14-methoxy-8β-methylmorphinan-6-one; 17-cyclobutylmethyl-3,14-dimethoxy-8β-methylmorphinan-6-one; 17-cyclobutylmethyl-3-hydroxy-14-methoxy-8β-methylmorphinan-6-one; 17-cyclopropylmethyl-3-hydroxy-14-methoxy-8α-methylmorphinan-6-one; 17-cyclopropylmethyl-14-methoxy-8β-methylmorphinan-3,6-diol or a pharmacologically acceptable, non-toxic acid addition salt thereof.

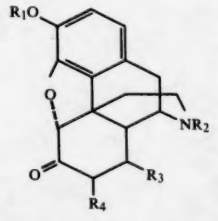
38. A therapeutic method for treating pain without liability of drug dependence in an individual for whom such therapy is indicated which method comprises administering to the individual an effective analgesic amount of a compound selected from the group of 17-cyclopropylmethyl-3,14-dimethoxymorphinan-6-one, 17-cyclopropylmethyl-3-hydroxy-14-methoxymorphinan-6-one, 17-cyclobutylmethyl-3-hydroxy-14-methoxy-8α-methylmorphinan-6-one or a pharmacologically acceptable, non-toxic acid addition salt thereof.

4,272,541
7,8 AND 7-8 SUBSTITUTED 4,5α-EPOXYMORPHINAN-6-ONE COMPOUNDS, AND METHODS OF TREATING PAIN AND DRUG DEPENDENCE WITH THEM

Michael P. Kotick, Elkhart, Ind.; Robert N. Schut, Edwardsburg, Mich.; Joseph O. Polazzi, and David L. Eeland, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 911,939, Jun. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 876,640, Feb. 10, 1978, abandoned. This application Jul. 11, 1979, Ser. No. 56,549
Int. Cl.[3] A61K *31/485;* **C07D** *489/02*
U.S. Cl. 424—260 **34 Claims**

1. 7,8 and 7-8 substituted 4,5α-epoxymorphinan-6-one compounds characterized by the structural formula:



wherein R_1 is H or methyl; R_2 is cyclopropylmethyl, cyclobutylmethyl, allyl or tetrahydrofurfuryl; R_3 is β-methyl, β-ethyl or α-ethyl and R_4 is H or α-methyl, provided that:

i. when R_2 is allyl, R_3 is β-ethyl, R_4 is H and R_1 is H;

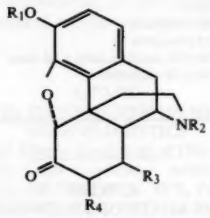
ii. when R_2 is tetrahydrofurfuryl, R_3 is β-ethyl, R_4 is H and R_1 is H;

iii. when R_2 is cyclobutylmethyl, R_1 is H and R_3 and R_4 are, respectively, either β-ethyl and H, β-methyl and α-methyl or β-methyl and H;

iv. when R_2 is cyclopropylmethyl and R_1 is methyl, R_3 is β-ethyl and R_4 is H; and

v. when R_2 is cyclopropylmethyl and R_1 is H, R_3 and R_4 are, respectively, either β-ethyl and H, α-ethyl and H or β-methyl and α-methyl.

19. A therapeutic method for treating pain in an individual for whom such therapy is indicated without liability of drug dependence which method comprises administering to the individual an analgesically effective amount of a compound characterized by the formula:



wherein R_1 is H or methyl; R_2 is cyclopropylmethyl, cyclobutylmethyl or tetrahydrofurfuryl; R_3 is β-methyl, β-ethyl or α-ethyl and R_4 is H or α-methyl, provided that:

i. when R_2 is tetrahydrofurfuryl, R_3 is β-ethyl, R_4 is H and R_1 is H;

ii. when R_2 is cyclobutylmethyl, R_1 is H and R_3 and R_4 are, respectively, either β-ethyl and H, β-methyl and α-methyl or β-methyl and H;

iii. when R_2 is cyclopropylmethyl and R_1 is methyl, R_3 is β-ethyl and R_4 is H; and

iv. when R_2 is cyclopropylmethyl and R_1 is H, R_3 and R_4 are, respectively, either β-ethyl and H, or α-ethyl and H.

33. A therapeutic method for treating drug dependence in an individual for whom such therapy is indicated, which method comprises administering to said individual an effective narcotic antagonist amount of a compound selected from the group of 17-allyl-4,5α-epoxy-8β-ethyl-3-hydroxymrophinan-6-one or 17-cyclopropylmethyl-4,5α-epoxy-3-hydroxy-7α-methyl-8β-methylmorphinan.

4,272,542

USE OF DI-SODIUM AND DI-POTASSIUM SALTS OF DICARBOXYLIC AMINO ACIDS AND TRI- OR DI-SODIUM OR POTASSIUM PHOSPHATE TARTRATE OR CITRATE TO IMPROVE THE TASTE OF IN VIVO HYDROLYSABLE ESTERS OF α-AMINO PENICILLINS AND CEPHALOSPORINS

Charles B. Taskis, Worthing, England, assignor to Beecham Group Limited, England

Filed Jul. 27, 1976, Ser. No. 709,123

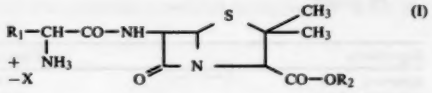
Claims priority, application United Kingdom, Aug. 7, 1975, 32976/75

Int. Cl.[3] **A61K** *31/43, 31/66, 31/195*

U.S. Cl. 424—271 **15 Claims**

1. A powder which may be reconstituted into an oral pharmaceutical composition in suspension or solution form by the addition of water which powder comprises

(a) fine particles of a penicillin of the formula



(I)

wherein

R_1 is phenyl, 4-hydroxyphenyl or cyclohexadienyl;

R_2 is acetoxymethyl, pivaloyloxymethyl or phthalidyl; and

X^- is a pharmaceutically acceptable anion; and

(b) a di-sodium or di-potassium salt of a di-carboxylic amino acid or tri- or di-sodium or potassium phosphate, tartrate or citrate; the weight ratio of said penicillin to said di-sodium or di-potassium salt of a di-carboxylic amino acid or tri- or di-sodium or potassium phosphate, tartrate or citrate being from 2:1 to 1:5.

4,272,543

PHARMACOLOGICALLY ACTIVE 4,5-DIARYL-2-SUBSTITUTED-IMIDAZOLES

Ulrich Niedballa, and Irmgard Bottcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

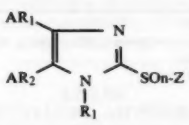
Filed Dec. 27, 1979, Ser. No. 107,802

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856909

Int. Cl.[3] **A61K** *31/415;* **C07D** *233/84*

U.S. Cl. 424—273 R **38 Claims**

1. An imidazole derivative of the formula



AR_1 and AR_2 are independently each phenyl; or phenyl substituted by halogen, C_{1-4} alkyl, C_{1-4} alkoxy or C_{2-6} dialkylamino; with the proviso that AR_1 and AR_2 are not both unsubstituted phenyl;

R_1 is hydrogen, alkyl of 1–4 carbon atoms or alkyl of 1–4 carbon atoms substituted by hydroxy, C_{1-4} alkoxy or C_{1-6} alkanoyloxy;

n is 0, 1 or 2; and

Z is cyano; alkynyl of 2–6 carbon atoms; cycloalkyl of 3–8 carbon atoms; cycloalkyl of 3–8 carbon atoms substituted by hydroxy, acyloxy, hydroxymethyl or acyloxymethyl, "acyl" in both cases being the acyl group of a hydrocarbon, aliphatic C_{1-6} carboxylic acid or of benzoic acid; or alkyl of 1–4 carbon atoms substituted by cyano or cycloalkyl of 3–6 carbon atoms;

or a physiologically acceptable salt thereof with an acid.

37. A method of treating inflammations in a mammal which comprises administering an antiinflammatorily effective amount of a compound of claim **1** to the mammal.

4,272,544

SKIN CELL RENEWAL REGIME

John A. Cella, Carmel; Merlyn G. Flom, Noblesville; Anne M. Herrold, Brownsburg; Joe O. Martin, Martinsville, and Ovidio Vargas, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 20, 1980, Ser. No. 179,627

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **2 Claims**

1. A method of increasing the rate of skin cell turnover without causing skin irritation which comprises applying to the skin in a regime:

(a) a cleanser formulation consisting essentially of, in percent by weight:

Ingredients	Percent
deionized water	39.73
propylene glycol	6.00
magnesium aluminum silicate	1.10
sodium carboxymethyl cellulose	0.10
methyl p-hydroxybenzoate	0.20
imidazolidinyl urea	0.30
ethylenediaminetetraacetic acid	0.02
sodium N-lauryl-&-iminodipropionate	4.00
titanium dioxide	0.75
sodium isostearoyl-2-lactylate	2.00
soya sterols	1.00
polyoxyethylene (10) soya sterols	2.50
polyoxyethylene (3) myristyl ether myristate	8.00
polyoxypropylene (15) stearyl ether	8.00
heavy mineral oil	8.00
propylene glycol dicaprylate/dicaprate (80/20 to 50/50)	7.00
cetyl alcohol (1-hexadecanol)	4.00
stearyl alcohol (1-octadecanol)	2.00
propyl p-hydroxybenzoate	0.10
glyceryl monostearate and polyethylene glycol (100) monostearate	2.00
triple pressed stearic acid	2.50
lactic acid	1.10
fragrance	0.60

(b) a cream formulation consisting essentially of, in percent by weight:

Ingredients	Percent
light mineral oil	4.45
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	2.50
undecanoic triglyceride	2.00
squalane	5.00
distilled lanolin alcohol	0.55
white beeswax	1.00
polydimethyl cyclosiloxane	9.00
triglyceryl diisostearate	4.00
isopropyl myristate	5.00
propyl p-hydroxybenzoate	0.10
quaternary bentonite	0.40
deionized water	59.00
methyl p-hydroxybenzoate	0.20
70% sorbitol solution	5.00
imidazolidinyl urea	0.30
urea	0.50
glyoxyldiureide	0.20
DL-pantothenyl alcohol	0.50
cis-1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	0.10
fragrance	0.20

(c) a lotion formulation consisting essentially of, in percent by weight:

Ingredients	Percent
deionized water	69.35
xanthan gum	0.15
propylene glycol	5.00
polyoxyethylene (30) stearate	1.70
methyl p-hydroxybenzoate	0.20
imidazolidinyl urea	0.30
polyphenylmethylsiloxane	3.00
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	1.00
glyceryl monostearate, neutral non-emulsifying	2.00
propyl p-hydroxybenzoate	0.20
sorbitan monostearate	2.00
ethylene glycol monostearate	1.00
lanolin oil	2.50

-continued

Ingredients	Percent
isopropyl myristate	3.00
squalane	8.50
fragrance	0.10

(d) a tonic formulation consisting essentially of, in percent by weight:

Ingredients	Percent
deionized water	80.12
polyethylene and polypropylene glycol	2.00
glyoxyldiureide	0.20
polyethylene glycol (300)	9.00
imidazolidinyl urea	0.40
denatured alcohol	7.00
methyl p-hydroxybenzoate	0.10
propyl p-hydroxybenzoate	0.05
polyoxyethylene (60) sorbitan fatty acid ester	0.30
polyoxyethylene (10) oleylether	0.50
menthol	0.03
fragrance	0.30

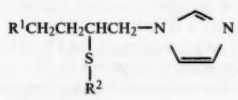
4,272,545

DERIVATIVES OF THIENYL- AND FURYL-SUBSTITUTED N-BUTYL AND N-PHENYL IMIDAZOLES

Keith A. M. Walker, Los Altos Hills, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 2, 1979, Ser. No. 8,718
Int. Cl.[3] **A01N** *43/50;* **C07D** *403/00*
U.S. Cl. 424—273 R **10 Claims**

1. The compound of the formula



and the antimicrobial acid addition salts thereof wherein

R^1 is optionally substituted furyl, the substituents independently selected from the group halo, C_1 to C_6 alkyl and C_1 to C_6 alkoxy; and

R^2 is optionally substituted phenyl, the substituents independently selected from the group halo, C_1 to C_4 alkyl, C_1 to C_4 alkoxy and trifluoromethyl.

4,272,546

ESTERS OF 4-(MONOALKYLAMINO)BENZOIC HYDROXYALKANOIC ACIDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 861,736, Dec. 19, 1977, Pat. No. 4,196,208. This application Oct. 22, 1979, Ser. No. 87,136
Int. Cl.[3] **A61K** *31/245;* **C07C** *101/62*
U.S. Cl. 424—310 **10 Claims**

1. A compound of the formula:

wherein R_1 is an unbranched or branched alkyl group of the formula C_nH_{2n+1} where n is an integer from 8 to 19, inclusive; R_2 is selected from the group consisting of hydrogen, methyl,

carboxyalkyl, acetyl, succinyl, 1-(sodiumsulfo)loweralkyl, 1-(sodiumsulfo)polyhydroxyalkyl, and 1,3-bis(sodiumsulfo)aralkyl; and R_3 is selected from the group consisting of unsubstituted or substituted aryl selected from the group consisting of phenyl, 3-bromophenyl, 4-fluorophenyl, 2,6-dichlorophenyl, 2,4-difluorophenyl, 3-carbomethoxyphenyl, 4-carboxyphenyl, and 4-carboxamidophenyl, and substituted unbranched or branched (loweralkyl, loweralkenyl, cycloalkyl, or hydroxyloweralkyl) groups consisting of 1–6 carbon atoms and bearing 1–3 substituents selected from the group consisting of carboxy, carboalkoxy, carboxamido, N,N-dialkylcarboxamido, and 2-dimethylaminoethoxycarbonyl; and the pharmaceutically acceptable acid-addition and cationic salts thereof.

10. The method of treating hyperlipidemia and hyperlipoproteinemia and/or altering the lipoprotein pattern in a mammal comprising administering to said mammal an effective lipid-altering amount of a compound in accordance with claim **1**.

4,272,547
BENZOYL INDANE CARBOXAMIDES AS ANTIPHLOGISTICS

Georges Haas, and Alberto Rossi, both of Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

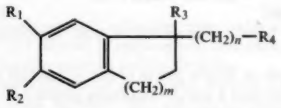
Division of Ser. No. 548,956, Feb. 11, 1975, Pat. No. 4,057,573. This application Aug. 18, 1977, Ser. No. 825,637

Claims priority, application Switzerland, Feb. 14, 1974, 2094/74

Int. Cl.[2] **C07C** *103/26, 69/02;* **A61K** *31/165, 31/22*

U.S. Cl. 424—311 **6 Claims**

1. A compound of the general formula



(I)

wherein one of the two radicals R_1 and R_2 denotes benzoyl, or benzoyl substituted by at least one member selected from lower alkyl, lower alkoxy, halogen and trifluoromethyl, and the other denotes hydrogen, hydroxy, hydroxy esterified by a lower alkanecarboxylic acid, or hydroxy etherified by a lower alkanol, R_3 denotes hydrogen, lower alkyl or lower hydroxyalkyl, R_4 denotes amidised carboxyl wherein the amino group is a member selected from di-lower alkylamino-lower alkylamino, hydroxylamino, hydrazino, mono-lower alkylamino, di-lower alkylamino and amino, m denotes 1 or 2 and n denotes 0 or 1, or therapeutically acceptable salts of said amidised carboxyl compounds.

6. An antiphlogistic, antirheumatic, antipyretic and mildly analgesic pharmaceutical preparation containing a correspondingly effective amount of one of the compounds mentioned in claim **1**, together with a pharmaceutical excipient.

4,272,548
PROCESS FOR THE LOWERING OF INCREASED LEVELS OF CHOLESTEROL AND NEUTRAL FAT IN THE BLOOD OF HUMANS

Carl-Jacob Gatzen, Pannebäckerstr. 20; Hartmut Poethen, Berger Allee 3, and Heribert Sion, Graf-Adolf-Platz 3, all of Düsseldorf, Fed. Rep. of Germany

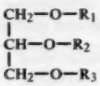
Filed Feb. 15, 1980, Ser. No. 121,688

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905979

Int. Cl.[3] **A61K** *31/23*

U.S. Cl. 424—312 **3 Claims**

1. A process for lowering increased cholesterol and neutral fat levels in the blood of humans comprising orally administering to said humans a cholesterol and neutral fat level reducing amount of a completely acetylated monoglyceride having the formula:



wherein one of the groups R_1,R_2 and R_3 is the acyl radical of a saturated or olefinically unsaturated fatty acid having from 12 to 22 carbon atoms and the other two groups represent acetyl groups, or a mixture of several such completely acetylated monoglycerides.

4,272,549
THERAPEUTICAL METHOD FOR THE TREATMENT OF CHRONIC URAEMIC PATIENTS UNDERGOING PERIODICAL HAEMODIALYSIS AND LIQUID COMPOSITION FOR DIALYSIS FOR USE IN SUCH A METHOD

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed May 14, 1979, Ser. No. 38,734

Claims priority, application Italy, May 15, 1978, 49355 A/78

Int. Cl.[3] **A61K** *31/205*

U.S. Cl. 424—316 **12 Claims**

1. A method for alleviating asthenia and muscle weakness in a chronic uraemic patient under regular dialysis treatment, which comprises submitting said patient to dialysis with a polysaline dialytic solution which contains a quantity of carnitine, or a pharmaceutically acceptable salt thereof, sufficient to render the molar concentration of carnitine in said solution at least equal to the molar concentration of the plasma carnitine of the patient under dialytic treatment.

4,272,550
OMEGA-[4-(POLYFLUORO-2-HYDROXY-2-PROPYL)-2,3,6-SUBSTITUTED-PHENOXY AND PHENYLTHIO]ALKANOIC ACIDS AND COMPOUNDS RELATED THERETO

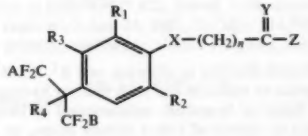
Bernard R. Neustadt, and Elijah H. Gold, both of West Orange, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 35,963, May 4, 1979, Pat. No. 4,199,597. This application Oct. 31, 1979, Ser. No. 89,804

Int. Cl.[3] **A61K** *31/135, 31/165;* **C07C** *93/06, 103/26*

U.S. Cl. 424—324 **6 Claims**

1. A compound of the formula



wherein A and B are independently hydrogen, chloro or fluoro;

R_1 is hydrogen, halo, lower alkyl or lower alkoxy;

R_2 is halo, lower alkyl or lower alkoxy;

R_3 is hydrogen or lower alkyl;

R_4 is hydroxy, lower alkoxy, amino, or mono- or di-lower alkylamino;

n is 1–4;

X is oxygen or $S(O)_m$ wherein m is 0–2;

Y is oxygen or (H,H); and

Z is amino, mono- or di-lower alkylamino or mono- or di-lower aralkylamino when Y is oxygen; or amino, mono- or di-lower alkylamino or lower aralkylamino when Y is (H,H); and the pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition adapted for the treatment of hypertension which comprises an anti-hypertensive amount

of a compound according to claim **1** in admixture with a pharmaceutically acceptable carrier therefor.

6. A method for the treatment of hypertension which comprises administering to a hypertensive mammal an anti-hypertensive amount of a compound according to claim **1**.

4,272,551

N-SULFENYLATED FORMANILIDES USEFUL AS FUNGICIDES AND BACTERICIDES

Eberhard Ammermann, Ludwigshafen; Sabine Thym, Heidelberg, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

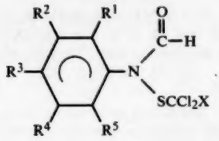
Filed Aug. 30, 1979, Ser. No. 71,550

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838750

Int. Cl.[3] **A01N** *37/18, 37/34, 37/00;* **C07C** *97/16*

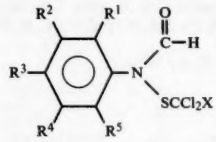
U.S. Cl. 424—324 **3 Claims**

1. An N-sulfenylated formanilide of the formula



where X denotes fluorine or chlorine, and R^1, R^2, R^3, R^4 and R^5 are identical or different and each denotes hydrogen, halogen, nitro, linear or branched, unsubstituted or halogen-substituted alkyl or alkoxy of 1 to 4 carbon atoms, or —CN or —COR^6, R^6 denoting linear or branched alkoxy of 1 to 6 carbon atoms or dialkylamino, the alkyls being linear or branched and of 1 to 4 carbon atoms, or R^6 denoting N-alkyl-N-arylamino, alkyl being of from 1 to 4 carbon atoms and aryl being unsubstituted or substituted by halogen or alkyl.

2. A method of combating fungi which comprises applying to the fungi or the objects to be protected against fungus attack with a fungicially effective amount of a formanilide of the formula



where X denotes fluorine or chlorine, and R^1, R^2, R^3, R^4 and R^5 are identical or different and each denotes hydrogen, halogen, nitro, linear or branched, unsubstituted or halogen-substituted alkyl or alkoxy of 1 to 4 carbon atoms, or —CN or —COR^6, R^6 denoting linear or branched alkoxy of 1 to 6 carbon atoms or dialkylamino, the alkyls being linear or branched and of 1 to 4 carbon atoms or R^6 denoting N-alkyl-N-arylamino, alkyl being of from 1 to 4 carbon atoms and aryl being unsubstituted or substituted by halogen or alkyl.

4,272,552

PROCESS FOR PRODUCING A LOW CARBOHYDRATE, LOW CALORIE BEER

Klaus D. Zastrow, St. Louis County, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Feb. 7, 1977, Ser. No. 765,968

Int. Cl.[3] **C12C** *9/00, 11/04*

U.S. Cl. 426—13 **7 Claims**

1. A process of brewing a low carbohydrate low calorie beer comprising the steps of

(a) preparing a hopped, boiled wort, which after straining and cooling, has a gravity of about 10° to about 18° Plato,

(b) preparing a separate malt mash, said mash containing about 0.5 to about 1.5% by weight of solids based on the weight of raw materials of the wort,

(c) treating the separate malt mash about 45° to about 55° C. for about 30 to about 150 minutes to substantially inactivate all of the microorganisms present while still retaining the enzyme activity,

(d) combining the wort and the treated separate malt mash with yeast to ferment the wort to produce a fermented wort

(e) preparing a purified carbonated water by dissolving CO_2 from a beer fermentation in deaerated water, and

(f) combining said carbonated water with the fermented wort from step (d) to produce a low calorie, low carbohydrate beer of about 95 to about 100 calories per 12 oz. serving.

4,272,553

PROCESS FOR PREPARING COATED FRIED VEGETABLES

Bengt L. Bengtsson, and Jörgen Fonskov, both of Bjuv, Sweden, assignors to Produits Findus S.A., Vevey, Switzerland

Filed Jun. 7, 1979, Ser. No. 46,220

Claims priority, application Switzerland, Jun. 13, 1978, 6423/78

Int. Cl.[3] **A21D** *6/00*

U.S. Cl. 426—241 **12 Claims**

1. A process for the preparation of fried vegetables which comprises:

(a) coating raw or frozen pieces of the vegetables either

i. in one step with a starch-containing product in dry state comprising a mixture of potato starch and cereal flour or a mixture of cereal flour and bread crumbs or corn flakes crumbs or a mixture of cereal flour, potato starch and bread or corn flakes crumbs; or

ii. in two steps with a fluid batter and then with a starch-containing product as defined in (i) above;

(b) blanching the coated pieces with steam for 1 to 5 minutes; and then

(c) deep fat frying the coated and blanched pieces for 0.5 to 1.5 minutes at 150° C. to 200° C.

4,272,554

PROCESS FOR PREPARING BLISTER-INHIBITED POTATO CHIPS

Otto E. Schroeder, Arlington; Alan Wohlman, Richardson, and Michael G. Topor, Farmer's Branch, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed May 7, 1979, Ser. No. 36,367

Int. Cl.[3] **A23L** *1/216*

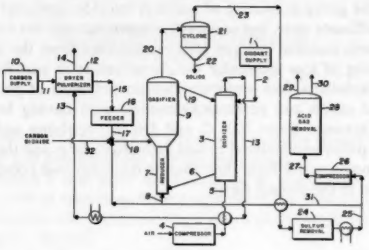
U.S. Cl. 426—321 **11 Claims**

1. A process for making potato chips which comprises contacting potato slices, having a thickness of up to about 0.1 inch, with an aqueous solution having calcium dissolved therein to add to said slices a small amount of calcium sufficient to inhibit the formation of blisters on the slices upon frying, said aqueous solution having calcium dissolved therein in a concentration of up to about 0.05 molar, said contacting being at a temperature of about 10° to 40° C., and frying the resulting calcium-containing slices to provide said chips.

4,272,555
CONVERSION OF CARBON-CONTAINING MATERIALS TO CARBON MONOXIDE

George D. Davis, Creve Coeur, Mo.; James C. Hill, Seabrook, Tex.; Talmage D. McMinn, Des Peres, and Charles W. Rooks, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 21, 1979, Ser. No. 77,694
Int. Cl.[3] C01B *31/18*
U.S. Cl. 423—415 A 13 Claims



1. A continuous process for the gasification of carbon-containing materials in a fluidization system comprising a reduction zone and a gasification zone which comprises:

(a) introducing particulate solid oxidant at an elevated temperature into said reduction zone,

(b) introducing carbon monoxide substantially devoid of free oxygen into said reduction zone at such a rate to fluidize said oxidant and cause it to move upwardly through said system,

(c) maintaining said reduction zone under conditions such that said oxidant is reduced and said carbon monoxide is oxidized to gaseous carbon dioxide,

(d) introducing carbon-containing material into said gasification zone whereby said carbon-containing material is entrained in and mixed with said upward moving oxidant and gaseous carbon dioxide,

(e) maintaining said gasification zone under conditions such that said carbon-containing material and carbon dioxide are endothermically reacted to carbon monoxide, and

(f) withdrawing a gaseous effluent comprising carbon monoxide from said gasification zone.

4,272,556
METHOD FOR FORMING POTATO DOUGH FROM DRY POTATO AGGLOMERATES AND WATER

Mounir A. Shatila, and William H. Von Der Lieth, both of Blackfoot, Id., assignors to AMPCO Foods, Inc., San Francisco, Calif.

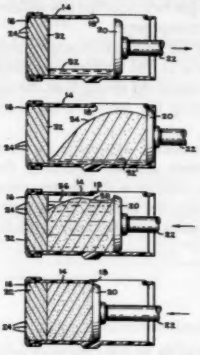
Continuation of Ser. No. 507,601, Sep. 19, 1974, abandoned. This application Aug. 30, 1976, Ser. No. 718,849
Int. Cl.[3] D21C *3/04, 11/18;* D21D *2/00*
U.S. Cl. 426—453 8 Claims

1. In an improved process for forming potato dough by combining a quantity of water sufficient to form dough with a quantity of dry potato agglomerates containing fines in a chamber and consolidating the water and agglomerates into a volume within said chamber by reciprocating a piston therewithin in a consolidating stroke thereby forming a homogeneous dough without agitation, the improvement comprising the steps of:

(a) introducing a first minority portion of said water into the chamber, the minority portion being in the range of about 15%–20% by volume of the quantity of water;

(b) adding all the agglomerates containing fines into the first portion of water in the chamber to form a mix; and then

(c) supplying the balance of said quantity of water into the mix and moving said piston in a consolidating stroke thereby wetting said fines more efficiently so that a more uniform homogeneous dough is produced, the supplying



and moving steps being performed before the agglomerates and water set into a firm dough.

4,272,557
STABLE GELATIN DESSERT AND PROCESS FOR MAKING SAME

Bernard H. Nappen, Cranford, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

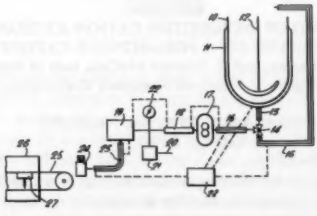
Filed Dec. 10, 1979, Ser. No. 101,781
Int. Cl.[3] A23L *1/06*
U.S. Cl. 426—576 6 Claims

1. In a gelatin dessert of the type prepared by dissolving a dessert powder consisting essentially of powdered gelatin, sugar, and optionally flavor and color in warm or boiling water with stirring, adding cold water and allowing the resulting mixture to set at refrigeration temperature until a gel is formed, the improvement which consists essentially of the presence in said dessert powder of about 0.5 to 5% by weight of guar gum, based on the weight of the powder, thereby providing said gelatin dessert with low-temperature stability.

4,272,558
METHOD AND APPARATUS FOR PRODUCING A CELLULAR PRODUCT

David W. Bouette, Macclesfield, England, assignor to E. T. Oakes Limited, Macclesfield, England

Continuation of Ser. No. 927,922, Jul. 25, 1978, abandoned. This application Jan. 24, 1980, Ser. No. 114,748
Claims priority, application United Kingdom, Jul. 27, 1978, 31655/77
Int. Cl.[3] A23G *3/00*
U.S. Cl. 426—660 8 Claims



1. A method of making a cellular food product comprising the steps of:

(a) providing an edible component;

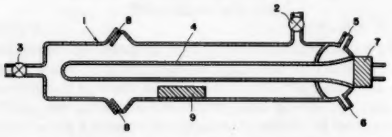
(b) heating the edible component to render it in the molten condition;
(c) introducing into the molten component under pressure either a gas or a liquified gas which is largely soluble in the molten component;
(d) mixing the molten component and gas to disperse the gas uniformly in the molten component so that it is thoroughly dissolved throughout the molten component while maintaining the molten component and gas under pressure;
(e) then suddenly releasing the pressure by expansion to atmospheric pressure whereby the dissolved gas forms gaseous bubbles in the molten component; and
(f) solidifying the molten component into the finally deposited resulting cellular food product by cooling.

4,272,559

METHOD FOR SURFACE TREATMENT OF SHAPED ARTICLES OF POLYVINYL CHLORIDE RESINS

Michihiko Asai, Fujisawa; Keishiro Tsuda, and Akira Okada, both of Yokohama, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,211
Claims priority, application Japan, Nov. 1, 1977, 52/131094
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—54.1 **2 Claims**



1. A process for preventing low molecular weight plasticizers from migrating to the surface of a shaped poly(vinyl chloride) article which contains such plasticizers in amounts of 15 to 50% by weight comprising irradiating the poly(vinyl chloride) at the surface of said article with ultra-violet radiation having a wavelength in the range from 105–200 nm in an environment selected from the group consisting of vacuum, nitrogen, oxygen or air whereby a highly cross-linked layer of poly(vinyl chloride) is formed at the surface of said article which prevents the migration of said low molecular weight plasticizers.

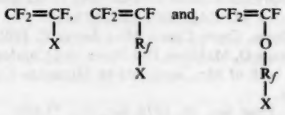
4,272,560

METHOD OF DEPOSITING CATION EXCHANGE MEMBRANE ON A FORAMINOUS CATHODE

Stanley K. Baczek, and G. Howard McCain, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 23, 1979, Ser. No. 87,332
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—58 **7 Claims**

1. A method for forming a membrane over a standard diaphragm cell foraminous cathode comprising the steps of: dissolving in a solvent a polymeric material polymerized from at least two monomers, one said monomer consisting essentially of a fluorinated vinyl compound and said other monomer consisting essentially of at least one monomer of the structure



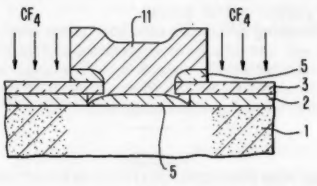
wherein R_f is a bifunctional perfluorinated radical containing from two to eight carbon atoms, which carbon atoms may be interrupted by one or more oxygen atoms and X is selected from the group consisting of sulfonyl fluoride, carbonyl fluoride, sulfonate ester, and carboxylate ester, said solvent for said polymeric material being at least one selected from the group consisting of low molecular weight polymers of perhalogenated alkylethers, low molecular weight polymers of perhalogenated alkyls and perfluorokerosenes, each having boiling points between about 200° C. and 350° C.; applying said dissolved polymeric material to said cathode surface; and thereafter stripping said solvent therefrom to resolidify said polymeric material in the shaped form.

4,272,561

HYBRID PROCESS FOR SBD METALLURGIES

Laura B. Rothman, Sherman, Conn.; Paul A. Totta, Poughkeepsie, and James F. White, Newburgh, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1979, Ser. No. 43,416
Int. Cl.[3] H01L *21/283, 29/48*
U.S. Cl. 427—84 **25 Claims**



1. A lift-off method for forming a metallic film on a substrate comprising:
(a) depositing a blanket coating of a metal film on said substrate;
(b) depositing a blanket film of a solvent soluble organic polymer on said metal film,
(c) depositing a blanket film of a masking material on said polymeric film,
(d) forming a predetermined pattern of openings through said masking and polymeric films to expose corresponding portions of said metal film,
(e) depositing an etch resistant blanket layer of a diverse conductive metal, which is inert to said solvent, over said masking and exposed portions of the first said metal film,
(f) subjecting the components structure to said solvent to solvate said polymeric film and concurrently lifting-off all superimposed films thereon and expose underlying portions of the first said metal film, and
(g) removing the said underlying exposed portions of said metal film.

4,272,562

METHOD OF FABRICATING AMORPHOUS MEMORY DEVICES OF REDUCED FIRST FIRE THRESHOLD VOLTAGE

Grady M. Wood, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 19, 1979, Ser. No. 50,033
Int. Cl.[3] H01L 45/00
U.S. Cl. 427—87 8 Claims

1. A method of forming an amorphous memory device with reduced first fire threshold voltage comprising:

depositing a first layer of material in an amorphous state capable of switching from a high resistance state to a low resistance state when a voltage above its threshold voltage level is applied;

heating the first layer sufficiently to crystallize said first layer; and

depositing a second layer of the same material as said first layer in an amorphous state;

said first and second layers constituting the storage media of homogeneous material.

4,272,563

MANUFACTURE OF MAGNETIC RECORDING MEDIA HAVING A WEAR-RESISTANT SURFACE

Werner Steck, Mutterstadt; Werner Loeser, Ludwigshafen; Manfred Steuerwald, Frankenthal; Gerd Wunsch, Speyer, and Paul Deigner, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 3, 1977, Ser. No. 765,159
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608022
Int. Cl.[3] B05D 5/12
U.S. Cl. 427—130 4 Claims

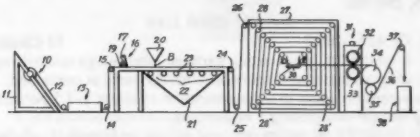
1. In a process for the manufacture of a magnetic recording medium, provided with a uniform wear-resistant protective surface layer of thickness of 0.01 μm to 0.2 μm, the medium comprising a base which is stable up to 300° C. and a thin layer of cobalt-containing ferromagnetic metal of thickness from 0.06 μm to 0.6 μm, firmly bonded thereto, said ferromagnetic metal layer consisting essentially of from 90 to 98.5% by weight of cobalt and from 1.5 to 10% by weight of phosphorus, wherein the improvement comprises: treating the surface of the metallic recording layer at a pH of from 9 to 13.2 for from 1 to 60 minutes at temperatures of from 5° to 70° C. with a basic medium consisting essentially of (a) a solution of a compound in a solvent of water, lower alcohols or mixtures thereof, said compound being selected from at least one member of the group consisting of hydroxides, carbonates and tertiary phosphates of alkali metals and ammonia, and (b) gaseous exygen present in said solution, washing and drying the so-treated recording medium, and heating said treated recording medium in the presence of oxygen at temperatures of from 170° to 300° C.

4,272,564

FLEXIBLE REFLEX-REFLECTIVE ARTICLE HAVING UNDULANT SURFACE AND METHOD OF MAKING THE SAME

Josef Grewe, and Philip Portner, both of Hagerstown, Md., assignors to C. M. Offray & Son, Inc., New York, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,454
Int. Cl.[3] G02B 5/128; B05D 5/06, 3/12
U.S. Cl. 427—163 14 Claims



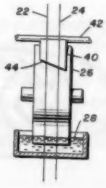
1. The method of forming a reflex-reflective flexible article having an undulant surface portion defined by reflex-reflective spheres arrayed in an undulant pattern, which comprises the steps of providing a flexible web, having an undulant pattern on at least one surface, coating at least portions of said at least one surface with a tacky liquid layer of high shrink adhesive, said layer having an inner surface conforming to said at least one surface and having a substantially flat outer surface, said layer being of irregular thickness in accordance with the undulant pattern of said at least one surface of said web, covering said outer surface of said layer with reflex-reflective spheres, causing said spheres to be embedded into said layer to essentially equal depths, and thereafter causing said liquid adhesive layer to cure and shrink, thereby to deform said outer surface of said adhesive from an essentially flat to an undulant configuration.

4,272,565

FINISH APPLICATION FOR TANDEM WINDING

James P. Glass, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 23, 1979, Ser. No. 96,953
Int. Cl.[3] B65H 54/04
U.S. Cl. 427—177 4 Claims



1. In a process for applying finish to first and second yarns being wound on respective first and second bobbins, said first and second bobbins forming respective first and second nips with and being driven by frictional engagement with a shared bobbin drive roll, said yarns having finish applied thereto by contact with respective first and second different regions on the periphery of a rotating finish roll prior to entering said nips, said first yarn passing through said first nip and being wound on said first bobbin, said second yarn passing through said first and second nips and being wound on said second bobbin, the improvement comprising providing a thicker finish film on said second region of said finish roll than on said first region of said finish roll.

4,272,566
SUSPENSION AGENT FOR SYNTHETIC RESIN POWDERS

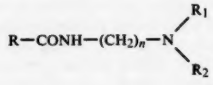
Anton Capelle, Delden, Netherlands, and Heinz Scholten, Haltern, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 6,874, Jan. 26, 1978, Pat. No. 4,237,040, which is a continuation of Ser. No. 658,579, Feb. 17, 1976, abandoned. This application Apr. 29, 1980, Ser. No. 144,888
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507504
Int. Cl.³ B05D *5/10*
U.S. Cl. 427—208.2 **12 Claims**

1. A method of spot coating garment interlinings comprising preparing an aqueous dispersion wherein there is contained:

I. a suspension agent in a concentration of about 1–7.5 percent by weight comprising a mixture of

(a) about 95–40 molar percent of an aminoamide of the general formula



wherein

R represents a saturated or unsaturated hydrocarbon group having 13–19 carbon atoms,

n represents an integer of between 2 and 6, and

R_1 and R_2 represent alkyl groups having 1–3 carbon atoms; and

(b) about 5–60 molar percent of an acid salt of said aminoamide; and

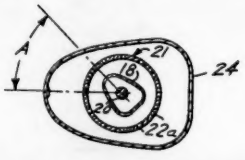
II. a concentration of about 25–50 percent by weight synthetic resin powders having melting points not more than about 140° C.; and

spot coating said garment interlinings with said aqueous dispersion.

4,272,567
CONTROLLED DISPERSION OF COATING INSIDE NON-CIRCULAR HOLLOW ARTICLES

Harry N. Blakeslee, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 961,513, Nov. 17, 1978, Pat. No. 4,233,932. This application Jan. 18, 1980, Ser. No. 113,366
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—236 **3 Claims**



1. A method of coating the inside surface of a hollow tube of a non-circular cross-section configuration comprising the steps of:

(1) inserting a coating distributing apparatus into the interior of said tube, said distributing apparatus comprising:

(a) a first means mounted for rotation about an axis at relatively high angular velocity for disbursing coating material in a radial direction from said first means,

(b) a coating delivery means having a pressurized coating material supply and a transportation system connected and arranged to deliver a quantity of coating material to said first means, and

(c) a shaped passage ending in a generally noncircular orifice nozzle means at the distal portion of said transportation system and generally in alignment with said axis for defining the form of said deposit for its distribution by said first means, said nozzle means having a configuration bearing a relationship to the distribution pattern desired;

(2) angularly displacing the distributing apparatus with respect to the configuration of said tube so that the coating is applied and distributed in a predetermined manner;

(3) rotating said first means and delivering pressurized coating material to said first means in order to distribute coating material in a radial pattern towards said inside surface; and,

(4) adjusting the flow of the coating material through said distributing apparatus by controlling the period and amount of flow.

4,272,568
PROTECTIVE GLOVE AND ITS METHOD OF MANUFACTURE

Francis T. Berend, Boulogne-sur-Seine, France, assignor to Societe Anonyme Parinter, Paris, France

Continuation of Ser. No. 844,465, Oct. 21, 1977, abandoned. This application Sep. 24, 1979, Ser. No. 78,661
Int. Cl.³ B05D *1/18, 3/10*
U.S. Cl. 427—261 **2 Claims**

1. A method of manufacture of a protective glove having high qualities of mechanical and physical strength and chemical resistance and having a flexible inner lining, covered externally by a protective coating of plasticized polyvinyl chloride, comprising, providing a flexible inner lining of a glove made in the shape of a glove, coating said lining by soaking in a first chemical bath of a coating material imparting to said lining excellent qualities of mechanical and physical strength followed by draining, incompletely gelling the coating, after soaking in said first bath of a material able to give the glove excellent qualities of mechanical and physical strength and after the incomplete gelling followed by draining, and before gelling is complete effecting a second soaking in a second bath of a coating material able to impart to the glove excellent qualities of resistance to chemicals, said second soaking being only partial and covering only the fingers and palm of the glove, and the first bath having the following composition: for 100 parts by weight polyvinyl chloride, approximately 110 to 130 plasticizer, whereof approximately 40 to 60 are phosphate plasticizer, and the second bath having a composition, for 100 parts by weight polyvinyl chloride, of approximately 140 to 160 plasticizer of which approximately 70 to 80 are polymeric plasticizer.

4,272,569

WATER AND SOLVENT RESISTANT COATED PAPER AND METHOD FOR MAKING THE SAME

Michael J. Shaw, Kalamazoo, and Robert J. Thiessen, Richland, both of Mich., assignors to Allied Paper Incorporated, Kalamazoo, Mich.

Division of Ser. No. 827,127, Aug. 24, 1977, abandoned. This application Jun. 1, 1979, Ser. No. 44,664

Int. Cl.[3] B05D *3/10*

U.S. Cl. 427—336 1 Claim

1. A method for the preparation of substrates having improved water resistance which comprises

(a) applying to such substrate a formulation containing a binding amount of a natural or synthetic binder and a filler at least a portion of which is an amount of plastic particles, said formulation further containing encapsulated in capsules a solvent to which the plastic particles are sensitive;

(b) drying the formed coating, said plastic particles being in an essentially non-coalesced state at time of application and non-film forming under the conditions of application and drying of the coating; and

(c) rupturing said capsules following application of said formulation, thereby wetting the formed coating from step (a) with said solvent;

the amount of plastic particles and sensitivity being sufficient to form a film thereof on exposure to said solvent, thereby materially increasing water and/or solvent resistance.

4,272,570

PROVISION OF SURFACE LAYERS OF COPPER OR COPPER ALLOYED WITH ZINC ON DIE CASTINGS OF ZINC OR ZINC ALLOYS

Raichur S. Narayan, Schaumburg, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Apr. 11, 1980, Ser. No. 139,388

Int. Cl.[3] C23C *3/02*

U.S. Cl. 427—436 7 Claims

1. A process for providing surface layers of copper or copper alloyed with zinc on die castings of zinc or zinc alloys comprising a step of immersing the castings in an agitated bath containing an aqueous vehicle, which has been adjusted to a pH of approximately from 8 to 10, and to which cupric oxide or cuprous oxide has been added as a powder in an amount of approximately from 200 to 250 grams per liter of the agitated bath.

4,272,571

FLOWER PRESERVATION

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 914,172, Jun. 9, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,126

Int. Cl.[3] A01L *3/00*

U.S. Cl. 428—24 16 Claims

7. A single step process for preserving fresh, naturally coloured blooms comprising immersing untreated said fresh blooms in an essentially water-free composition consisting essentially of at least one dehydrating alcohol, a urea-containing compound, a carboxylic acid, and an alkaline citrate, an effective amount of at least one of aluminum or magnesium sulphate, a transitional metal sulphate, and an alkaline formaldehyde sulfoxylate and from zero to an effective amount of at least one of a silicone fluid and a silicone resin; said composition also containing a sufficient quantity of at least one compound of the group consisting of an alkaline phosphate, a lower carboxylic acid and phenol so as to ensure said composition has a pH in the range 5 to 7.

4,272,572

VIBRATION ISOLATION STRUCTURE

Samuel G. Netherly, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 11, 1979, Ser. No. 83,642

Int. Cl.[3] F16F *7/00*; E04B *1/82*; D02G *3/00*

U.S. Cl. 428—35 12 Claims

1. An article especially suited for use as a vibration isolating or shock absorbing structure comprising a multitude of short, resiliently compressible, elastic, tubular, rubbery bodies held together in closely-packed relationship by restraining means, wherein said rubbery bodies comprise a cured thermosetting millable extrudable composition having in the cured state an elasticity in excess of 200% and an elongation at break in excess of 300% and wherein said tubular bodies are characterized by having a length to diameter ratio from about 2:1 to about 8:1 and a wall thickness of at least about 0.025 inch.

4,272,573

SELF-ADHESIVE TAPE

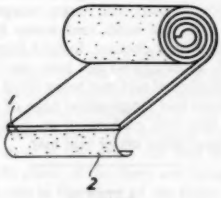
Richard Ewald, Weinheim, and Klaus Freiberg, Mannheim, both of Fed. Rep. of Germany, assignors to Braas & Co. GmbH, Frankfurt Am nain, Fed. Rep. or Germany

Filed May 21, 1979, Ser. No. 41,180

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821859

Int. Cl.[3] C09J *7/00*; C08K *5/09*, *5/06*, *5/02*

U.S. Cl. 428—40 12 Claims



1. A self-adhesive tape comprising 100 parts by weight of a vinyl chloride/vinylisobutylether copolymer from 100 to 400 parts by weight of a mixture of nitrile rubber and a polyvinylchloride homopolymer, from 60 to 230 parts by weight of a plasticiser consisting of one or more esters of phthalic acid, and from 4 to 70 parts by weight of a resinous plasticiser which is an epoxy resin and which imparts adhesive properties to the composition.

4,272,574

OPTICALLY READABLE INFORMATION DISC

Gerardus J. M. Lippits; Arnoldus J. M. van den Broek, and Rinse Dijkstra, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,952

Claims priority, application Netherlands, Apr. 17, 1978, 7804036

Int. Cl.[3] G11B *7/24*

U.S. Cl. 428—64 6 Claims

1. An optically readable information disk which having a laminated structure and comprising a relatively thick transparent substrate having laminated thereto a layer of a cured resin comprising an information track having a crenelated profile,

said cured resin being the cross-linked substantially aprotic product of a radiation curable lacquer having a viscosity of less

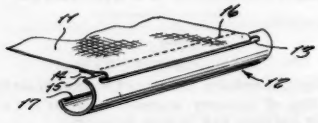
than 100 cP comprising a mixture of a cross-linkable protic polythiol compound and a radiation cross-linkable polyene compound.

4,272,575

ANCHOR MAT

Robert S. Egigian, c/o Mrs. Evelyn Kuntz, 2700 Zinfandel Dr., Rancho Cordova, Calif. 95670

Filed Dec. 28, 1979, Ser. No. 108,213
Int. Cl.[3] B32B *3/02, 3/04*
U.S. Cl. 428—83 **1 Claim**



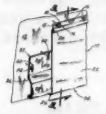
1. An anchor mat, comprising, in combination, a rectangular mat and an anchor secured at each opposite end thereof, said mat being made of any woven material, and each said anchor including means for using the weight of beach sand for anchoring said mat opposite ends; said means comprising a scoop for being inserted into said sand; said scoop being a generally semi-cylindrical shaped channel, formed from a rigid sheet of plastic material, an elongated slot near one longitudinal edge thereof, one end edge of said mat being fitted therein and sewn into a loop around said longitudinal edge of said scoop, and a pillow on top said mat cushioning an opposite longitudinal edge of said scoop when under said mat.

4,272,576

WALL COVERING

Stanley N. Britson, White Fox Rd., Webster City, Iowa 50595

Filed Oct. 1, 1979, Ser. No. 80,347
Int. Cl.[3] E04D *1/34;* **B32B** *3/06*
U.S. Cl. 428—100 **2 Claims**



1. A wall covering for attachment to a wall, said covering comprising:

an elongated horizontal siding member having an upper edge and a lower edge,

first securing means for attaching said upper edge of said siding member to said wall,

a horizontal bottom strip having in cross section a single thickness comprising an upper vertical surface, a first angled surface extending downwardly from said vertical surface and outwardly away from the vertical plane of said vertical surface, a second angled surface extending downwardly and outwardly from said vertical plane at a steeper angle than said first angled surface, and a male locking flange extending inwardly toward said vertical plane from the lower edge of said second angled surface;

second securing means for attaching said upper vertical surface of said strip to said wall;

said elongated siding member having a female locking flange at the lower edge thereof, said female locking flange extending inwardly toward said vertical plane and retentively surrounding and embracing said male locking flange of said bottom strip so as to be held against movement by said bottom strip;

said siding member extending downwardly at an angle which is substantially the same as said steeper angle of said second surface and being in facing engagement with the entire surface of said second angled surface;

said male and female locking flanges being spaced outwardly from said vertical plane sufficiently far to permit manual access between said vertical plane and said male and female locking flanges together;

said male locking flange having in cross section a horizontal portion extending from said lower edge of said second angled surface to an inner edge spaced from said vertical plane, said male locking flange further including a lip portion extending upwardly from said inner edge of said horizontal portion;

said female locking flange having in cross section a horizontal portion and a lip portion surrounding and embracing said horizontal and lip portions of said male locking member;

said lip portion of said female locking flange having a bead portion extending toward said lip portion of said male locking flange for retentively locking said male and female locking flanges together in nested relationship;

said lip portion of said male locking flange having an outward projection extending toward said lip portion of said female locking flange at a point below said bead portion whereby said outward projection and said bead portion engage one another to retentively hold said male and female locking flanges in nested relationship;

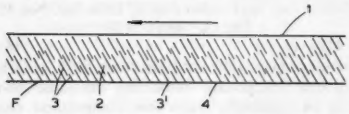
said second securing means comprising horizontally spaced apart vertically elongated holes permitting horizontal adjustment of said bottom strip around said wall.

4,272,577

PLASTIC NON-WAX SKI BASE AND METHODS FOR ITS MANUFACTURE

Stig Lyng, Oslo, Norway, assignor to Andelslaget for Norsk Skiforskning, and Sentralinstitutt for Industrielle Forskning, Oslo, both of, Norway

Filed Jun. 12, 1978, Ser. No. 915,306
Claims priority, application Norway, Jun. 10, 1977, 772044; Jan. 2, 1978, 780006; Jan. 5, 1978, 780044
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—112 **13 Claims**



1. A no wax ski base comprising a matrix of plastic material having embedded therein elongated particles of a material harder than said plastic material, said matrix and particles defining a composite material having areas of varying hardness, said particles being angularly oriented within said matrix, said particles having longitudinal dimensions of a minimum size sufficient to ensure that said particles in interaction with said matrix form a three-dimensional gliding surface of the ski base, said gliding surface having a direction-dependent friction

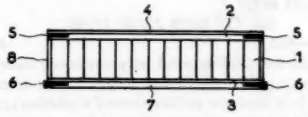
coefficient when said gliding surface is subjected to wear including a pretreated involving grinding said gliding surface in a direction from the front end thereof to the back and thereof, said longitudinal dimensions of said particles being of a maximum size less than the thickness of the ski base, and said particles forming mutually offset and spaced harder areas throughout said thickness, such that said areas become gradually exposed during wear of the ski base, thereby providing an effective configuration and friction coefficient of said gliding surface during the entire service life of the ski base such that said gliding surface provides good gliding properties in the ski forward direction with good grip properties in the backward direction of the ski.

4,272,578

SKI APPARATUS

Robert J. F. Schegerin, 44 Ave. Gabriel Teri, 91430 Igny, France

Filed May 31, 1979, Ser. No. 44,174
Int. Cl.[3] B32B *3/12*
U.S. Cl. 428—113 **20 Claims**



1. Composite ski structure having longitudinal and transverse dimensions comprising:

a core having upper and lower surfaces extending over at least a major portion of the length of the ski structure and formed of a material having a maximum allowable shear stress in the longitudinal direction greater than about 25 bars and a maximum allowable compressive stress in a direction normal to said longitudinal and transverse dimensions greater than about 21 bars;

a working upper layer affixed to the upper surface of said core comprising a material having a modulus of elasticity in the longitudinal direction of less than about 4,700 hbars, and said upper layer having a cross-sectional area such that the product of the modulus of elasticity and the cross-sectional area of said upper layer is in the range of between about 140,000 hbars mm^2 and about 400,000 hbars mm^2; and

a working lower layer affixed to the lower surface of said core comprising a material different from the material which comprises said working upper layer and having a modulus of elasticity in the longitudinal direction of greater than about 4,700 hbars, said lower layer having a cross-sectional area such that the product of the modulus of elasticity and the cross-sectional area of said lower layer is in the range of between about 130,000 hbars mm^2 and about 530,000 hbars mm^2.

4,272,579

LAMINATED STACK MANUFACTURE

Yoshiaki Mitsui, Kitakyushu, Japan, assignor to Mitsui Mfg. Co., Ltd., Kitakyushu, Japan

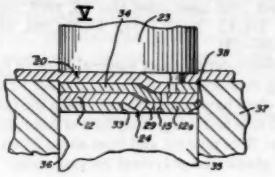
Division of Ser. No. 819,479, Jul. 27, 1977, Pat. No. 4,110,895. This application Jun. 22, 1978, Ser. No. 917,942
The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.
Int. Cl.[3] B32B *3/24*
U.S. Cl. 428—133 **10 Claims**

1. A laminated stack manufacture comprising:

a first sheet having a first keyhole-shaped aperture;

a second sheet overlying said first sheet and having a second keyhole-shaped aperture substantially corresponding to and aligned with said first aperture, projection extending downwardly from said second sheet and received in said first aperture, said projection defining an arcuate distal end defining with an arcuate end of the subsequent aperture a circular opening in each but the top sheet; and

a plurality of additional sheets similar to said second sheet and stacked thereon with the projection of each extending into the aperture of the subjacent sheet and the top surface of the top sheet being substantially planar, the bottom



surface of said first sheet being substantially planar and having said first aperture open downwardly therethrough, the said sheets cooperatively defining an interlocked stack having apertured substantially planar top and bottom surfaces, said planar bottom surface of the stack permitting positive facial support of the stack on a flat underlying support during stacking manufacture thereof.

4,272,580

DECORATIVE PARCHMENT PAPER

Rocio S. de Zepeda-Bermudez, Hoskins 4-D, Escondido Village, Stanford, Calif. 94305

Continuation of Ser. No. 898,391, Apr. 19, 1978, abandoned. This application Jan. 31, 1980, Ser. No. 117,204
Int. Cl.[3] B32B *3/26, 29/06*
U.S. Cl. 428—153 **2 Claims**

1. A decorative paper comprising a single ply sheet of parchment paper characterized in that it embodies discrete interspersed, randomly-scattered puffed and unpuffed areas, said puffed areas varying in area in the plane of the sheet and in thickness perpendicular thereto and defining voids between the surfaces of the sheet in said areas and said unpuffed areas varying in area in the plane of the sheet and being of substantially uniform thickness in the plane of the sheet.

4,272,581

HEAT RESISTANT DECORATIVE LAMINATE

James Cooley, 555 Azalea, and Ozzie Fogle, Rte. 3, Box 377F, both of Orangeburg, S.C. 29115

Continuation of Ser. No. 949,193, Oct. 6, 1978, abandoned, which is a continuation of Ser. No. 812,232, Jul. 1, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 70,173
Int. Cl.[3] B32B *5/16, 27/08*
U.S. Cl. 428—328 **4 Claims**

1. A low pressure decorative and heat resistant laminate material consisting essentially of a wood containing substrate base member directly secured to a polyvinylchloride film by an organic adhesive selected from the group consisting of phenol-formaldehyde, urea-formaldehyde, melamine-formaldehyde, furfural resins, polyvinyl resins, urethane resins, mixtures of phenol-formaldehyde and butadiene acrylonitrile synthetic rubber, synthetic rubber derivatives mixed with phenol-formaldehyde resins and polyvinyl butyral mixed with phenol-formaldehyde, having aluminum powder with an average particle size of about 1 to 50 microns dispersed therein such that said adhesive contains about 10 to 50 weight percent of said aluminum powder.

4,272,582

WATERPROOFING SHEET MATERIAL

Charles A. Kumins, Gates Mills, and Milan L. Warford, Shaker Heights, both of Ohio, assignors to Tremco, Inc., Cleveland, Ohio

Division of Ser. No. 887,292, Mar. 16, 1978, which is a continuation-in-part of Ser. No. 798,566, May 19, 1977, abandoned. This application Oct. 26, 1979, Ser. No. 88,400

Int. Cl.[3] B32B 27/42, 9/04; C08L 93/00

U.S. Cl. 428—332 3 Claims

1. A self-supporting sheet material suitable for use as a waterproofing membrane in roofing and other structural applications, said sheet having a thickness within the range of about 20 to about 90 mils and being composed of from about 15 wt.% to about 80 wt.% of pine oil, and from about 85 wt.% to about 20 wt.% of a plasticized polyvinyl butyral resin.

4,272,583

FLAMEPROOFED EXPANDABLE STYRENE POLYMERS

Klaus Hahn, Lampertheim; Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal, and Heinz Weber, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Del.X

Continuation-in-part of Ser. No. 10,727, Feb. 8, 1979. This application Jul. 21, 1980, Ser. No. 170,521

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809979

Int. Cl.[3] C08J 9/22

U.S. Cl. 428—407 6 Claims

1. A particulate expandable styrene polymer which comprises: styrene polymer particles containing from 0.01 to 2.0 parts by weight based on 100 parts by weight of the particles of an organic bromine compound as a flameproofing agent on the surface of the particles, said flameproofing agent being applied to the particles by tumbling whereby said flameproofing agent is restricted to the surface areas of the particles, said particles further containing (a) from 3 to 10 percent by weight of a liquid or gaseous organic blowing agent which does not dissolve the polymer and which boils below the softening point of the polymer and (b) from 0.01 to 1.0% by weight of an organic synergistic flame-proofing agent containing a labile C—C, O—O or N=N bond and having a decomposition half-life, measured at 100° C. in benzene, of more than 5 hours, said blowing agent and said synergistic flameproofing agent being homogeneously dispersed throughout the particles.

4,272,584

PLATABLE HIGH HEAT ABS RESINS AND PLATED ARTICLES MADE THEREFROM

Gerald Goldberg, Parkersburg; Charles L. Myers, Vienna, both of W. Va.; Charles F. Parsons, Little Hocking, Ohio, and William Steffancin, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 16, 1979, Ser. No. 85,362

Int. Cl.[3] B32B 27/28, 27/06, 15/08

U.S. Cl. 428—412 10 Claims

6. A metal plated article of manufacture capable of passing thermal cycles of from 180° F. to −30° F. comprising from 65 to 100 parts by weight of (a) a high heat ABS blend having a heat deflection temperature at 264 psi of at least 234° F. of a compression molded ⅛″×½″ annealed specimen under ASTM test D-648 and comprising (1) an alphamethyl styrene copolymer containing at least 50% alphamethyl styrene by weight and at least 20% acrylonitrile by weight and (2) a graft polymer prepared by reacting a monomer mixture of from 20–40% acrylonitrile by weight and correspondingly from 80–60% of a monovinyl aromatic hydrocarbon by weight in the presence of a diene rubber, the alphamethyl styrene content of said blend of (1) and (2) being at least 35% by weight, (b) from 35 to 0 parts by weight of a polycarbonate and (c) from about 0.05 to about 0.5 parts of a siloxane polymer having a viscosity of from 200 to 100,000 centistokes and having the following structure:

where R and R′ are hydrogen, methyl or other alkyl.

4,272,585

PROCESS FOR TREATING POLYVINYLIDENE FLUORIDE AND RESULTING PRODUCTS

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 905,933, May 15, 1978, abandoned, which is a continuation of Ser. No. 782,313, Mar. 29, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,376

Claims priority, application France, Apr. 6, 1976, 76 09917; Jan. 7, 1977, 77 00327

Int. Cl.[3] B32B 27/38, 27/40

U.S. Cl. 428—413 9 Claims

1. A process for treating solid polyvinylidene fluoride surfaces to enhance adhesion of other polymers thereto comprising applying to at least one surface thereof a solution consisting essentially of a coating polymer selected from a polyurethane or an alkyl polymethacrylate and at least one aprotic polar solvent in which said polymer is soluble, and exposing said surface to a temperature of from about 100° to 300° C. for a time sufficient to evaporate said solvent.

8. The product of the process of claim 1.

4,272,586

LAMINATED GLASS PRODUCT

Toshihiro Ando; Hiroshi Ohgi, and Ikuji Kishi, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,105

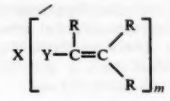
Claims priority, application Japan, Feb. 23, 1978, 53-20249; Feb. 23, 1978, 53-20250; Apr. 28, 1978, 53-50130

Int. Cl.[3] B32B 27/28; C08F 2/46

U.S. Cl. 428—419 7 Claims

1. A laminated glass product having a bonding layer formed by curing a photocurable composition comprising a polyene component, a polythiol component, an organosilicone compound and a photocuring rate accelerator; wherein

(A) said polyene is a compound having the formula

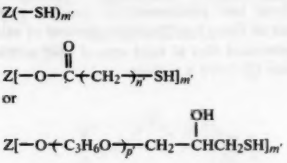


wherein m is an integer of 2 to 6; R represents a hydrogen atom, a C_1–C_8 alkyl, a C_1–C_3 alkoxy or phenyl group which can be substituted with a substituent of nitro, C_1–C_8 alkyl or alkoxy group or a halogen atom; Y is $—(CH_2)_n$ wherein n is 0 or an integer of 1 to 10, $—OCH_2)_p$ wherein p is an integer of 1 to 10, $—O—(CH_2)_q$ wherein q is an integer of 1 to 10 or

and X is a polyvalent group which has a valency of m representing benzene, toluene, ethylene glycol, diethylene glycol, triethylene glycol, trimethylolpropane, phthalate, cyanurate, isocyanurate, trimellitate, ethane, N,N-pipera-

zine, orthosilicate, phosphate, oxalate, terephthalate, diphenylterephthalate or methylenediamine group;

(B) said polythiol is a compound having the formula

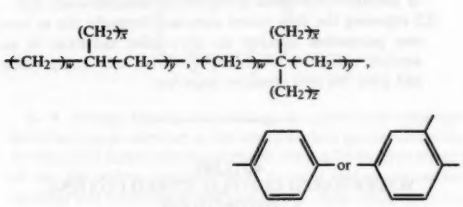


(II)

(III)

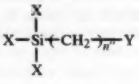
(IV)

wherein Z is a group connecting m′ members and is $-CH_2)_v$



wherein v is an integer of 1 to 6, and w, x, y and z are respectively 0 or an integer of 2 to 6; m′ is an integer of 2 to 4; n′ and p′ are respectively 0 or an integer of 1 to 3; said polythiol having an average molecular weight of 50 to 15,000;

(C) said organosilicone compound is a compound having the formula

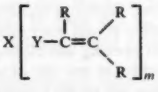


(V)

wherein n″ is 0 or an integer of 1 to 3; X represents chlorine atom or a C_1–C_8 alkoxy or acetoxy group which can be substituted by chlorine atom, nitro group or a C_1–C_2 alkoxy group; and Y represents vinyl group which can be substituted by chlorine atom, methoxy, ethoxy, propyloxy or acetoxy; or acryloyl, methacryloyl or mercaptan group; and

(D) said photocuring rate accelerator is selected from the group consisting of benzophenone, p-methoxybenzophenone, acetophenone, m-chloroacetophenone, propiophenone, xanthone, benzoin, benzoin methyl ether, benzoin ethyl ether, benzoin isopropyl ether, benzoin isobutyl ether, benzyl benzaldehyde, naphthoquinone, anthraquinone, 2,4,7-trinitro-9-fluorenone, 5-nitro-acenaphthene, p-nitrodiphenyl, p-nitroaniline and malachite green.

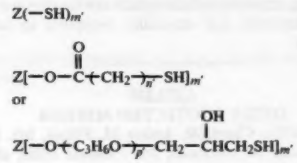
5. A photocurable composition which comprises a polyene component, a polythiol component, an organosilicone compound and a photocuring rate accelerator wherein said polyene is a compound having the formula



wherein m is an integer of 2 to 6; R represents a hydrogen atom, a C_1–C_8 alkyl, a C_1–C_3 alkoxy or phenyl group which can be substituted with a substituent of nitro, C_1–C_8 alkyl or alkoxy group or a halogen atom; Y is $—CH_2)_n$ wherein n is 0 or an integer of 1 to 10, $—CH_2)_p$ wherein p is an integer of 1 to 10, $—CH_2)_q$ wherein q is an integer of 1 to 10 or

and X is a polyvalent group which has a valency of m representing benzene, toluene, ethylene glycol, diethylene glycol, triethylene glycol, trimethylolpropane, phthalate, cyanurate, isocyanurate, trimellitate, ethane, N,N-piperazine, orthosilicate, phosphate, oxalate, terephthalate, diphenylterephthalate or methylenediamine group;

said polythiol is a compound having the formula

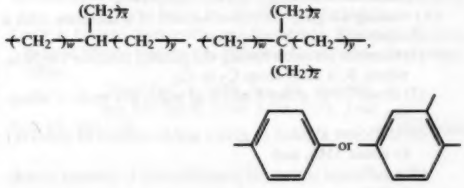


(II)

(III)

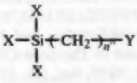
(IV)

wherein Z is a group connecting m′ members and is $-CH_2)_v$



wherein v is an integer of 1 to 6, and w, x, y and z are respectively 0 or an integer of 2 to 6; m′ is an integer of 2 to 4; n′ and p′ are respectively 0 or an integer of 1 to 3; said polythiol having an average molecular weight of 50 to 15,000; and

said organosilicone compound is a compound having the formula



(V)

wherein n″ is 0 or an integer of 1 to 3; X represents chlorine atom or a C_1–C_8 alkoxy or acetoxy group which can be substituted by chlorine atom, nitro group or a C_1–C_2 alkoxy group; and Y represents vinyl group which can be substituted by chlorine atom, methoxy, ethoxy, propyloxy or acetoxy group; or acryloyl, methacryloyl or mercaptan group.

4,272,587

GLASS ARTICLE HAVING ABRASION RESISTANT AND LABEL RECEPTIVE COATING AND METHOD OF PRODUCING SAME

Edgardo Santiago, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 17, 1979, Ser. No. 104,210
Int. Cl.³ B32B *17/06*
U.S. Cl. 428—432 **10 Claims**

1. In a method of increasing the scratch and abrasion resistance as well as the lubricity and labelability of a glass surface wherein pyrolyzable tin or titanium compounds are applied to a hot glass surface to form a tin or titanium oxide layer thereon and then an organic material is sprayed onto said oxide layer

while at a lower elevated temperature, the improvement wherein said organic material comprises a label-accepting physical mixture of acrylic resin aqueous emulsion and low molecular weight polyethylene resin aqueous emulsion, said resins in said mixture varying from a solids ratio of about 7:1 to 1:1.

5. As an article of manufacture, a coated glass article having a tin oxide or titanium oxide layer directly adhered to the surface of said glass article and an organic material applied over the said oxide layer comprising the decomposition product of a physical mixture of acrylic resin aqueous emulsion and low molecular weight polyethylene resin aqueous emulsion varying from a solids ratio of about 7:1 to 1:1, said coated article having exterior surfaces which are scratch and abrasion resistant, lubricious and especially receptive to labels and printing inks.

4,272,588

OXIDE PROTECTED MIRROR

Bulent E. Yoldas, Churchill; Arthur M. Filippi, Mt. Lebanon, and Raymond W. Buckman, Jr., Pleasant Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1979, Ser. No. 69,214

Int. Cl.[3] **B05D** *3/02;* **G02B** *1/10, 5/08*

U.S. Cl. 428—433 **15 Claims**

7. A method of making a mirror comprising

(A) coating a highly reflective surface of a substrate with a composition which comprises

(1) titanium alkoxide having the general formula $Ti(OR)_4$, where R is alkyl from C_1 to C_6;

(2) about 1.7 to about 8 moles of water per mole of alkoxide;

(3) sufficient alcohol to give a solids content of about 0.1 to about 15%, and

(4) a sufficient amount of a suitable acid to prevent cloudiness;

(B) firing said coated substrate at about 200° to about 600° to form an oxide coating which is substantially oxygen impervious,

(C) repeating steps (A) and (B), as necessary, until said oxide coating is of a desirable thickness.

4,272,589

PROCESS FOR GLUING TWO MEMBERS USING A PHOTOPOLYMERIZABLE SUBSTANCE

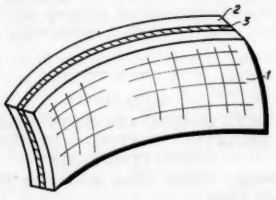
Jean-Claude Dubois; Armand Eranian, and Paul Paimblant, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 12, 1979, Ser. No. 102,901

Claims priority, application France, Dec. 15, 1978, 78 35385

Int. Cl.[3] **B32B** *17/10;* **B29C** *19/02*

U.S. Cl. 428—442 **15 Claims**



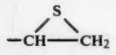
1. A process for gluing together two members, at least one of said members being permeable to ultraviolet radiation, said process comprising:

(A) applying to at least one of said members a layer of a solvent-free photopolymerizable composition that is photopolymerized by the exposure of ultraviolet radiation thereto, said composition comprising a mixture of:

(1) at least one vinyl monomer having a functionality of at least 2 and a molecular weight less than 500 grams;

(2) at least one reactive polymer that is soluble in said monomer (1); and

(3) at least one photosensitive catalyst present in an amount of from 1 to 5 weight percent of said composition provided that at least one of said monomer (1) or polymer (2) have a ti-irane



ring in its structure;

(B) joining the two members together with the applied layer of photopolymerizable composition therebetween; and

(C) exposing the thus joined members throught the at least one permeable number to ultraviolet radiation in an amount sufficient to photopolymerize said composition and joint the two members together.

4,272,590

WATER-BASED GLYOXAL CURED COATING COMPOSITIONS

Werner J. Blank, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 23, 1979, Ser. No. 32,208

Int. Cl.[3] **B32B** *15/08, 27/42*

U.S. Cl. 428—460 **11 Claims**

1. A coating composition for preparing water-resistant coatings comprising an emulsified copolymer containing about 0.2 to 4 moles of amide functionality per 1000 grams of copolymer, a cross-linkingly effective amount of glyoxal, and water.

11. The cured composition of claims 1, 4, 7 or 9 upon a substrate selected from the group consisting of metal, plastic and wood.

4,272,591

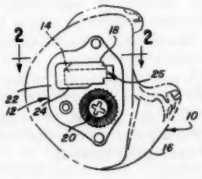
ELECTRONIC APPARATUS WITH BATTERY CHAMBER

Richard Brander, Cicero, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Mar. 25, 1980, Ser. No. 133,917

Int. Cl.[3] **H01M** *2/10*

U.S. Cl. 429—98 **5 Claims**

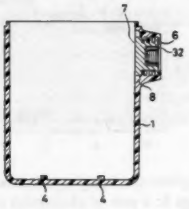


1. Compact electronic apparatus including a molded plastic body member, a chamber in said body member for receiving a battery and a door for opening and closing the battery chamber, hinge means provided at one side of said door; said hinge means comprising hinge pin means formed of plastic material, and plastic hinge pin support members for the hinge pin means formed in the plastic material of said body member at opposite sides of said chamber and being dimensioned with respect to the hinge pin means so that the hinge pin means may be snapped into the support members due to the resiliency of the plastic material from which they are formed.

4,272,592
STORAGE BATTERY

Shiro Miyagawa, Suita, Japan, assignor to Miyagawa Kasei Industry Co., Ltd., Osaka, Japan

Filed Jun. 8, 1979, Ser. No. 46,651
Claims priority, application Japan, Jun. 27, 1978, 53/89039[U]
Int. Cl.³ H01M 4/30
U.S. Cl. 429—161 2 Claims



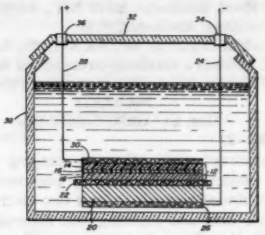
1. A storage battery comprising: an electrolyte container body having an opening in the upper surface produced by the molding of a thermoplastic synthetic resin, a lid fixed to the top of said electrolyte container body to close said upper surface opening and cooperating with said electrolyte container body to constitute an electrolyte container, a group of electrode plates housed in said electrolyte container, electrode bars operatively connected to said electrode plates, electrode leading-out members extending through the lateral wall of said electrolyte container body with their welding surfaces to be welded to said electrode bars facing the inside of said electrolyte container, said electrode leading-out members being presented at the lateral wall portion of said electrolyte container body when said electrolyte container body is molded with said electrode leading-out members placed in a die for molding said electrolyte container body, wherein a spacing is defined between the peripheral edge of said welding surface of each of said electrode leading-out members and a portion of said electrolyte container body extending around said welding surface, wherein said welding surface and the inner wall surface of said electrolyte container body extending around said welding surface are flush with each other, and wherein said spacing extending around the leading-out member is formed by the mold for said electrolyte container body, said spacing being formed by an annular recess in said inner wall surface of said electrolyte container body, said spacing being so located that the wall surfaces forming said spacing are defined by a portion of the respective electrode leading-out member and by a portion of the electrolyte container body.

4,272,593
ELECTROCHEMICAL CELL WITH IMPROVED CATHODE CURRENT COLLECTOR

Keith A. Klinedinst, Marlborough, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 25, 1980, Ser. No. 143,697
Int. Cl.³ H01M 4/36
U.S. Cl. 429—101 11 Claims

1. A primary electrochemical cell comprising:
an oxidizable active anode material;
a cathode current collector including a catalyst for reducing the liquid cathode material comprising a composite material of carbon and platinum bonded to an inert, electrically-conductive substrate; and an electrolytic solution, in contact with the anode material and cathode current collector, comprising a reducible

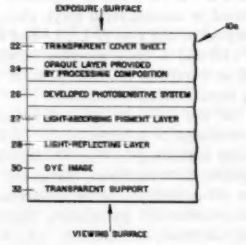


liquid cathode material and an electrolyte solute dissolved therein.

4,272,594
PHOTOGRAPHIC PRODUCT INCLUDING A LIGHT-REFLECTING LAYER WITH CARBON COATED WITH REFLECTING MATERIAL

Louis J. George, Somerville, and Barbara A. Theobald, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 4, 1978, Ser. No. 966,088
Int. Cl.³ G03C 1/40, 1/84, 5/54, 1/48
U.S. Cl. 430—14 40 Claims



1. A photographic product for forming a diffusion transfer image within a permanent laminate including at least one developed silver halide layer, the photographic product comprising, in combination: an image-receiving layer; at least one photosensitive silver halide emulsion layer, each said silver halide emulsion having associated therewith an image-forming material; means for providing a light-reflecting layer positioned between the silver halide layer or layers and the image-receiving layer and effective to mask the developed silver halide layer or layers and to provide a white background for viewing a transfer image in the image-receiving layer, the light-reflecting layer consisting essentially of a polymeric binder matrix having uniformly distributed therethrough a first light-reflecting pigment material and a second light-absorbing carbon-based pigment material consisting of particulate carbon coated with a light-reflecting material on substantially all of the surface area of the carbon particles; a transparent support through which the transfer image may be viewed against the light-reflecting layer; and means for providing a processing composition for developing the silver halide emulsion or emulsions after photoexposure and for forming a transfer image in said image-receiving layer.

4,272,595

ELECTROPHOTOSENSITIVE MATERIALS FOR MIGRATION IMAGING PROCESSES

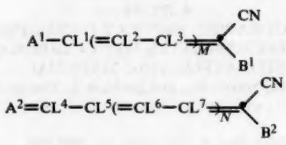
Frank G. Webster, Rochester; Michael T. Regan, Fairport, and Louis J. Rossi, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 899,186, Apr. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 818,697, Jul. 25, 1977, abandoned. This application Feb. 14, 1979, Ser. No. 12,172

Int. Cl.[3] G03G *5/06, 17/04*

U.S. Cl. 430—37 3 Claims

1. An electrophotoretic migration imaging process which comprises subjecting an electrically photosensitive colorant material positioned between at least two electrodes to an applied electric field and exposing said materials to an image pattern of radiation to which the material is photosensitive, thereby obtaining image formation on at least one of said electrodes, the improvement which comprises using as at least a portion of said material, an electrically photosensitive material having a structure selected from the group consisting of:



I.

II.

wherein:

M and N represent zero, one or two;

L^1, L^2, L^3, L^4, L^5, L^6, and L^7 represent cyano, hydrogen, substituted or unsubstituted alkyl, alkoxy, aralkyl, aryl or heterocycyl or any two of L^1, L^2 and L^3 and any two of L^4, L^5, L^6 and L^7 may together represent the elements needed to complete a carbocyclic or heterocyclic ring having from 5–12 carbon atoms;

A^1 may be the same as A^2 and in addition represents diarylaminoaryl or a heterocyclic nucleus selected from the group consisting of benzo[b]thiophene, naphtho[2,3-b]thiophene, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, 1,2,3,4-tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]-quinoline; 1,2-dihydro-4H-pyrrolo[3,2,1-ij]quinoline; 1,2,5,6-tetrahydro-4H-pyrrolo[3,2,1-ij]quinoline; 1H,5H-benzo[ij]quinolizine; 2,3-dihydro-1H,5H-benzo[ij]quinolizin; 2,3-dihydro1H,5H-benzo[ij]quinolizine and 2,3,6,7-tetrahydro-1H,5H-benzo[ij]-quinolizine; 10,11-dihydro-9H-benzo[a]xanthen-8-yl; 6,7-dihydro-5H-benzo[b]pyran-7-yl and pyrrolo[2,1-b]benzothiazole;

A^2 represents a heterocyclic nucleus selected from the group consisting of imidazole, benzothiazole, naphthothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, benzoxazole, naphthoxazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, pyrrolo[1,2-a]pyridine, 3H-indole, tetrazole, and acenaphthothiazole; and

B^1 and B^2 represent cyano, cyanoaryl, carboxy, alkoxycarbonyl, aryloxycarbonyl, alkylsulfonyl, acyl, furoyl, arylcarbonyl, benzofuroyl, nitro, nitro substituted aryl, sulfonyl, fluorosulfonyl, trifluoromethylsulfonyl, carbamoyl, arylcarbamoyl, and alkylcarbamoyl or

B^2 may be combined with $=CL^4-CL^5=$ or $=CL^6-CL^7=$ to provide sufficient atoms to form a substituted pyrindine nucleus.

4,272,596

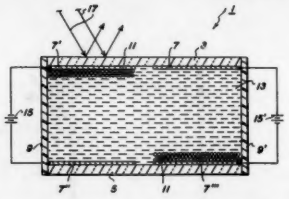
ELECTROPHORETIC DISPLAY DEVICE

John R. Harbour, Mississauga, and Michael L. Hair, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1979, Ser. No. 44,802

Int. Cl.[3] C25D *1/12;* G03G *13/00*

U.S. Cl. 430—37 9 Claims



1. An electrophoretic imaging process which comprises applying a voltage to a pair of electrodes spaced apart to form a cavity therebetween, at least one of said electrodes being transparent to visible light, said cavity containing an electrophoretic imaging suspension comprising (1) electrophoretic imaging particles suspended in (2) a suspending medium comprising a suspension of colloidal iron oxide particles in an electrically insulating liquid, whereby the voltage causes the electrophoretic movement of said electrophoretic particles in imagewise configuration and to visibly appear at said transparent electrode.

4,272,597

ELECTROPHOTOGRAPHIC SENSITIZING SCREEN

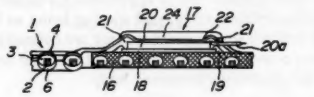
Masaji Nishikawa, No. 37-22, 2-Chome, Koyasu-Machi, Hachioji City, Tokyo; Norio Amemiya, No. 382, Namiki-Cho, Hachioji, Tokyo; Tadahiro Yasuda, No. 776-1, Yotsuya-Machi, Hachioji City, Tokyo, and Shigeru Nakayama, No. 1464-1, Hazama-Cho, Hachioji City, Tokyo, all of Japan

Continuation of Ser. No. 918,823, Jun. 22, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,318

Claims priority, application Japan, Jun. 24, 1977, 52-74969; Jun. 24, 1977, 52-74970; Jun. 24, 1977, 52-74971; Jun. 24, 1977, 52-74972; Jun. 24, 1977, 52-74973

Int. Cl.[3] G03G *5/04*

U.S. Cl. 430—68 2 Claims



1. An electrophotographic sensitizing screen being provided with at least an insulating layer and a conductive layer successively formed on a conductive mesh, a photosensitive layer on said conductive mesh opposite said insulating layer and a thin dielectric surface layer associated therewith wherein: an electrode plate is disposed on a part of said conductive mesh and insulated from said mesh and electrically connected to said conductive layer, so as to apply a given bias voltage thereto through said electrode plate, said electrode plate is disposed on a part of said conductive mesh in an insulated state from said mesh, there also being an adhesive layer being formed on the peripheral edge of said electrode plate, a metallic thin film on said electrode plate and adhesive layer formed by a vacuum evaporation process to electrically connect them to said conductive layer, and a conductive paint applied to said metallic thin film to cover a region including said electrode plate and the boundary between said electrode plate and adhesive layer.

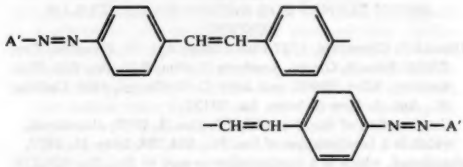
4,272,598

ELECTROPHOTOGRAPHIC MATERIAL CONTAINING DISAZO COMPOUNDS

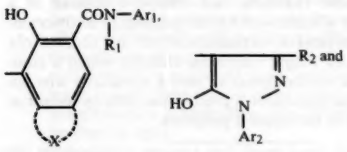
Masaomi Sasaki, Kawasaki; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Masafumi Ohta, and Akio Kozima, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

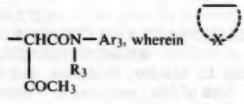
Filed Apr. 20, 1978, Ser. No. 898,130
Claims priority, application Japan, Apr. 27, 1977, 52-48859; Apr. 27, 1977, 52-48860
Int. Cl.³ G03G 5/06, 13/22
U.S. Cl. 430—72 54 Claims

1. An electrophotographic material which comprises an electrically conductive support and a photosensitive layer formed thereon, said photosensitive layer consisting essentially of fine particles of a disazo compound having the formula



wherein A′ is a member selected from the group consisting of





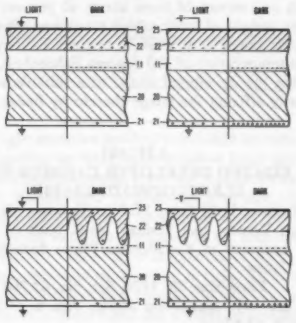
is a fused ring selected from the group consisting of benzene ring, halobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, methylchlorophenyl, dimethylphenyl, methoxychlorophenyl, methoxybromophenyl, methoxymethylphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, methoxyphenyl, methylphenyl, acetylaminophenyl, dimethylaminophenyl, cyanophenyl, nitrophenyl, dinitrophenyl, chlorophenyl, trichlorobenzenesulfonic acid, benzenesulfonic acid and benzenesulfonamide; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl, and R_2 is a member selected from the group consisting of methyl, carboxyl and $—COOC_2H_5$; and a resinous binder.

4,272,599

INK DEVELOPMENT OF ELECTROSTATIC IMAGES

Yaqub Moradzadeh, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 389,927, Aug. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 156,727, Jun. 25, 1971, abandoned. This application Jan. 14, 1977, Ser. No. 759,307
Int. Cl.³ G03G 13/10, 13/24
U.S. Cl. 430—100 12 Claims



1. A process for the ink development of an electrostatic image on a charge retaining surface on an imaging member for the purpose of subsequent transfer therefrom to a copy medium, said process comprising the steps of:

(a) wetting the charge retaining surface with a continuous film of a dielectric liquid that is less than about 15 microns thick and is chemically inert toward said surface,

(b) applying to said surface an electrical potential of optional polarity but predetermined magnitude,

(c) forming on said surface an electrostatic latent image comprising charged and uncharged image areas to create a contrast potential of at least a predetermined magnitude therebetween,

(d) applying with a roller to the wetted surface at said charged and uncharged image areas as a continuous thin film an electrically conductive liquid ink that contains no selectively depositable charged particles and is immiscible with the dielectric liquid, thereby to create by virtue of the magnitude of said contrast potential, an induced charge differential which exceeds a preselected threshold value at the interface between the ink and dielectric liquid, selectively at the charged or uncharged image areas on said surface according to whether an electrical bias potential of appropriate sign and magnitude is not or is, respectively, applied to the ink by way of said roller, which charge differential causes the electrically conductive ink

(i) to displace the dielectric liquid and thus cause all constituents of which the ink consists to selectively wet only the image areas subjected to said induced charge differential, and

(ii) to be completely repelled by the dielectric liquid in the areas not subjected to said charge differential, whereby an image is formed as a result of the magnitude of the induced charge differential across said interface, without precharging of said ink and independent of the polarity of the said electrical potential.

4,272,600
MAGNETIC TONERS CONTAINING CUBICAL MAGNETITE

Donald S. Sypula, and Cornelius B. Murphy, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

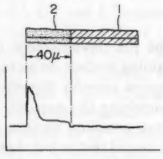
Filed Jan. 7, 1980, Ser. No. 110,075
Int. Cl.³ G03G *9/00*
U.S. Cl. 430—106 **9 Claims**

1. A method for developing magnetic latent images by causing the formation of a magnetic latent image on a suitable substrate, followed by contacting the image with a dry magnetic toner comprised of a copolymer resin of styrene-butadiene, which copolymer contains form about 75 percent to about 95 percent styrene, and the cubical magnetite, Mapico black, present in an amount of from about 40 percent to about 70 percent by weight of toner which toner has a fusing temperature latitude range of at least 30 degrees Fahrenheit, up to a maximum temperature of 390 degrees Fahrenheit, followed by transferring the developed image to a suitable substrate, and permanently affixing the image thereto by fusing.

4,272,601
COATED DEVELOPER CARRIER FOR ELECTROPHOTOGRAPHY

Hiroshi Tokura; Keiji Sato; Makoto Tomono, all of Hachioji; Sadatugu Terada, and Hideaki Arai, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,760
Claims priority, application Japan, Jun. 6, 1978, 53-67249; Jun. 6, 1978, 53-67250
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—108 **15 Claims**



1. A developer carrier for electrophotography comprising a plurality of core particles, said particles coated with a layer comprising a resin and a surface active agent incorporated therein, said agent containing at least one carbon-fluorine bond and having at least one functional group having an affinity for said resin.

14. A process for the preparation of a developer carrier for electrophotography having a plurality of core particles, said process comprising coating a layer on the surface of said particles by applying a solution comprising a resin and a surface active agent, said agent containing at least one carbonfluorine bond and having at least one functional group having an affinity for said resin.

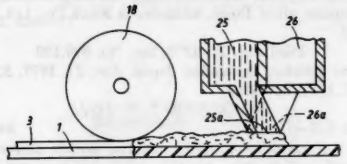
4,272,602
RECORDING MEDIUM AND METHOD OF MAKING

Otto Stemme, Munich, and Frank A. Staudacher, Haan, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,788
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839658
Int. Cl.³ B05D *3/14*
U.S. Cl. 430—140 **9 Claims**

1. An improved recording material having a magnetizable recording surface comprising a film substrate, a light sensitive layer on one surface, and a magentizable material which contains a magnetic pigment on the other surface of the support consisting of a polymeric binder with incorporated magnetic pigments

wherein the improvement comprises a plurality of strips of



said magnetizable material having areas of differing surface roughness consisting of at least one stripe having a surface of lesser roughness and at least one stripe having a surface of greater roughness.

4,272,603
RESIN BLENDS FOR IMPROVED VESICULAR SYSTEMS

Donald J. Chenevert, 1717 Pine Chase, Apt. 87, Houston, Tex. 77055; John R. Grawe, Southern Station, P.O. Box 506, Hattiesburg, Miss. 39401, and John C. McDaniel, 4100 Cadillac St., Apt. A, New Orleans, La. 70122

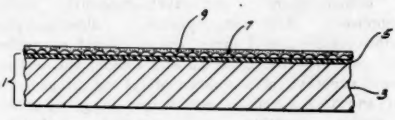
Continuation of Ser. No. 803,375, Jun. 3, 1977, abandoned, which is a continuation of Ser. No. 561,799, May 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 306,229, Nov. 13, 1972, abandoned. This application Nov. 6, 1979, Ser. No. 92,086
Int. Cl.³ G03C *1/60, 1/76, 1/72*
U.S. Cl. 430—155 **2 Claims**

1. In a light-sensitive vesicular material comprising a thermoplastic resin vehicle coated onto a polyethylene terephthalate backing in which is dispersed a photosensitive compound which is capable of decomposing to yield nitrogen gas when exposed to actinic radiation, said vehicle consisting of a blended polymer admixture of a homopolymer of methacrylonitrile and a copolymer of vinylidene chloride and acrylonitrile having 60–90% by weight vinylidene chloride which is compatible with said homopolymer of methacrylonitrile wherein the amount of said copolymer is greater than 50% by weight of the total weight of the blended polymers.

4,272,604
BASE PLATE AND LITHOGRAPHIC PLATE PREPARED BY SENSITIZATION THEREOF

Jim D. Meador, Bridgeton, and Edward H. Parker, Ballwin, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Continuation of Ser. No. 834,238, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 584,880, Jun. 9, 1975, abandoned. This application Sep. 13, 1979, Ser. No. 75,215
Int. Cl.³ G03C *1/54, 1/60, 7/08;* B41N *1/08*
U.S. Cl. 430—159 **13 Claims**



1. A lithographic plate comprising:

a substrate comprising a metal support and over said support a silicate barrier layer having a water-wettable hydrophilic surface, and over said substrate a lithographic coating comprising two layers applied in separate sequential coating steps, said layers comprising:

an inner oleophilic nonwater-redispersible reinforcing layer applied in a first coating step and which, as applied to the substrate, is subject to removal by a water/-polar organic solvent mixture and permeable to penetration by a light-sensitive condensation product, said inner layer comprising an olephilic nonwater-redispersible ink-receptive acrylic resin overlying said substrate and in direct contact with said surface, and

an outer water-soluble light-sensitive layer applied in a subsequent step over said inner layer, said outer layer comprising a negative-working light-sensitive condensation product of an aryl diazo compound and a carbonyl compound generally overlying said inner layer but sufficiently contiguous with said substrate by penetration of said condensation product through said layer so that both said inner layer and said outer layer become anchored to the substrate in the areas of exposure when the light-sensitive outer layer is exposed to light,

said outer layer becoming ink-receptive and resistant to removal by water in said areas of exposure and said inner layer becoming resistant in said areas to removal by water/polar organic solvent mixtures that are capable of removing said inner layer prior to exposure.

12. A planographic printing plate comprising:

a substrate comprising a metal support and over said support a silicate barrier layer having a water-wettable hydrophilic surface, and an ink-receptive image on the substrate comprising a coating comprised of an inner oleophilic reinforcing layer composition acrylic resin in contact with one surface and a light-reacted outer layer comprising the light induced reaction product of a water-soluble condensation product of an aryl diazo compound and a carbonyl compound,

said inner layer having been applied over said substrate in a first coating step and, as initially applied to said substrate, having been subject to removal by a water/polar organic solvent mixture and permeable to penetration by said condensation product, and

said light-reacted outer layer being the light reaction product of a light-sensitive water-soluble outer layer comprising said condensation product, said water-soluble outer layer having been applied over said inner layer in a coating step subsequent to said first step and generally overlying said inner layer but sufficiently contiguous with said substrate by penetration of said condensation product through said inner layer so that both the inner and the light-reacted outer layer are anchored to the substrate as a result of exposure of said condensation product to light,

said condensation product and inner layer having been removed from the non-light struck areas of the plate by a developing composition comprising water and a polar organic solvent, thereby uncovering said hydrophilic silicate surface in the non-image areas of the plate.

4,272,605

BASE PLATE AND LITHOGRAPHIC PLATE PREPARED BY SENSITIZATION THEREOF

Jim D. Meador, Bridgeton, and Edward H. Parker, Ballwin, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Continuation of Ser. No. 884,176, Mar. 7, 1978, abandoned, which is a division of Ser. No. 834,238, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 584,880, Jun. 9, 1975, abandoned. This application Sep. 13, 1979, Ser. No. 75,214

Int. Cl.³ G03F *7/08;* G03C *1/94*

U.S. Cl. 430—169 **12 Claims**

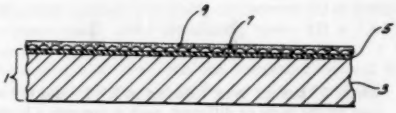
1. A method of preparing a lithographic plate comprising the steps of:

applying an aqueous light-sensitive coating solution containing a water-soluble negative-working light-sensitive condensation product of an aryl diazo compound and a carbonyl compound to a base plate comprising:

a substrate comprising a metal support and over said support a silicate barrier layer having a hydrophilic water-wettable surface, and

an oleophilic nonwater-redispersible reinforcing layer that is subject to removal by a water/polar organic solvent mixture and permeable to penetration by said light-sensitive condensation product, said oleophilic layer comprising an oleophilic nonwater-redispersible ink-receptive acrylic resin overlying said substrate and in direct contact with said surface,

the application of said aqueous solution to said substrate thereby providing a wet light-sensitive coating and effecting penetration of said condensation product through said oleophilic layer; and



drying said light-sensitive coating to provide an outer water-soluble negative working light-sensitive layer that generally overlies said oleophilic layer but is sufficiently contiguous with the substrate by penetration of said condensation product through said oleophilic layer so that the oleophilic layer becomes anchored to the substrate when the light-sensitive outer layer is exposed to light,

whereby upon exposure of the plate to light the outer layer becomes ink-receptive and resistant to removal by water in the areas of exposure and the oleophilic layer becomes resistant in said areas to removal by water/polar organic solvent mixtures that are capable of removing said oleophilic layer prior to exposure.

4,272,606

METHOD OF FORMING A HIGH-CONTRAST PHOTOGRAPHIC IMAGE

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Yoshiharu Fuseya, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 903,336, May 5, 1978, abandoned. This application Feb. 1, 1980, Ser. No. 117,882

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—264 **22 Claims**

1. A method for forming a negative photographic image comprising

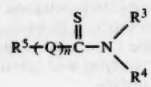
(i) image-wise exposing a photographic light-sensitive material comprising a support having thereon at least one silver halide mono-disperse photographic emulsion layer containing surface latent images silver halide grains and at least one compound represented by the following general formula (I):

$$R^1NHNHCOR^2 \quad (I)$$

in an amount of about 10^{-5} to about 10^{-1} mol/mol Ag, wherein R^1 represents an aryl group, R^2 represents a hydrogen atom, a phenyl group, or an unsubstituted alkyl group having 1 to 3 carbon atoms; in said photographic emulsion layer or in another hydrophilic colloid layer, and

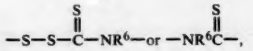
(ii) developing said exposed material with a developing solution containing a developing agent which is an aminophenol, a 3-pyrazolidone, a 1-phenyl-3-pyrazoline, a dihydroxybenzene or a mixture of a dihydroxybenzene and other of said afore-mentioned developing agents, and containing about 0.15 mol/liter or more of a sulfite ion and having a pH of about 10.5 to 12.3, wherein a compound having a thioamido moiety in the molecular structure thereof is present in an emulsion, an auxiliary layer, a developing solution or a prebath, as an agent which increases sensitivity and contrast, wherein said compound

having a thioamido moiety in the molecular structure thereof is represented by the following general formula (II):



(II)

wherein R^5 represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; and Q represents a sulfur atom, a selenium atom, an oxygen atom, a disulfide group, $-NR^6-$,



where R^6 has the same meaning as R^5; R^3 and R^4, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group or an amino group; and R^5 and R^6, R^3 and R^4 or R^3 and R^5 together may combine to form a 5- or 6-membered heterocyclic group provided that neither of R^4 nor R^6 represents a hydrogen atom when R^3 and R^5 combine to form a 5- or 6-membered heterocyclic group and n is 0 or 1.

4,272,607

PHOTOSENSITIVE RESIN COMPOSITION

Katsushige Tsukada; Nobuyuki Hayashi; Hideo Yamada; Toshiaki Ishimaru, and Hajime Kakumaru, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 29, 1977, Ser. No. 782,378

Claims priority, application Japan, Mar. 30, 1976, 51-35442

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—288 **23 Claims**

1. A photosensitive resin composition consisting essentially of

(a) 20 to 70 parts by weight of a polymer selected from the group consisting of a linear polymer having tetrahydrofurfuryl groups at side chains and a linear copolymer having tetrahydrofurfuryl groups at side chains, wherein the tetrahydrofurfuryl groups at side chains is contained in the polymer in a proportion of at least 0.007 mole/100 g,

(b) 20 to 60 parts by weight of one or more photopolymerizable unsaturated compounds having at least two terminal ethylene groups, and

(c) 1 to 10 parts by weight of one or more sensitizers which initiate polymerization of said unsaturated compounds by irradiation of active light.

4,272,608

PHOTOSENSITIVE COMPOSITIONS CONTAINING THERMOPLASTIC IONOMERIC ELASTOMERS USEFUL IN FLEXOGRAPHIC PRINTING PLATES

Stephen Proskow, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 1979, Ser. No. 27,445

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—288 **11 Claims**

1. A photosensitive, elastomeric composition which comprises, based on the total composition,

(a) 40 to 90% by weight of a high molecular weight butadiene/acrylonitrile copolymer having a number average molecular weight of 20,000 to 75,000, an acrylonitrile content of 10 to 50% by weight, and a carboxyl content of 2 to 15% by weight, 25 to 100 mole % of the carboxyl groups being neutralized with a metal cation of Groups IIA or IIB of the Periodic Table of Elements;

(b) 2 to 40% by weight of a nongaseous, ethylenically unsaturated compound containing at least one terminal ethylenic group, said compound being capable of forming a high polymer of free-radical initiated, chain-propagating addition polymerization and being compatible with copolymer (a);

(c) 0.001 to 10% by weight of a radiation-sensitive, free-radical generating system, activatible by actinic radiation which initiates polymerization of the unsaturated compound (b).

4,272,609

PHOTOPOLYMERIZABLE MIXTURE

Kurt Klüpfel, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

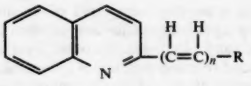
Filed Nov. 19, 1979, Ser. No. 95,363

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850585

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—288 **6 Claims**

1. A photopolymerizable mixture comprising a polymeric binder, a polymerizable compound having at least one terminal ethylenic double bond and a boiling point above 100° C., and a photoinitiator having the formula



wherein

R is an aromatic group either unsubstituted or substituted by alkoxy, alkyl, aryl, hydroxy or carboxylic acid amide groups or by halogen atoms, and

n is 1 or 2.

4,272,610

PHOTOPOLYMER PROCESS USING PHOTO OXIDIZABLE COMPONENT

David S. Breslow, and David A. Simpson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 912,154, Jun. 2, 1978, abandoned, which is a continuation of Ser. No. 739,928, Nov. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 405,192, Oct. 10, 1973, abandoned. This application Feb. 19, 1980, Ser. No. 122,162

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—302 **47 Claims**

1. The process of making a photographic image which comprises exposing selected areas of a photosensitive composition in film form to light having a wavelength of from about 2,000 to about 12,000 Angstroms in the presence of oxygen to form peroxides in said areas, and decomposing said peroxides to form free radicals which effect insolubilization of the composition in the exposed areas of the film, said photosensitive composition comprising a mixture of a photooxygenation sensitizer with a photosensitive composition comprising as essential components (1) a polymerizable ethylenically unsaturated component selected from ethylenically unsaturated monomers, ethylenically unsaturated polymers and mixtures thereof; capable of forming a high molecular weight polymer by addition polymerization or cross-linking, and (2) a photooxidizable component different from the said polymerizable ethylenically unsaturated component containing olefinic unsaturation of the type in which there is no more than one hydrogen atom on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons, which allylic hydrogen is not on a bridgehead carbon.

4,272,611
PHOTOPOLYMERIZABLE COMPOSITION FOR THE PRODUCTION OF PRINTING PLATES AND RELIEF PLATES, AND THE ELEMENTS PRODUCED THEREWITH

Rudolf Vyvial, Ludwigshafen; Guenter Wallbillich, Schifferstadt, and Horst Trapp, Plankstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 86,719

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846647

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—306 **9 Claims**

1. A photopolymerizable composition for the production of water-developable printing plates and relief plates which comprises: a water-soluble or water-dispersible mixture containing a photoinitiator, one or more olefinically unsaturated photopolymerizable monomers and one or more water-soluble or water-dispersible polymers containing vinyl alcohol units, wherein at least 10% by weight of said polymers containing vinyl alcohol units is a water-soluble vinyl alcohol polymer or copolymer containing recurring —CH_2—CH(OH)—units in the polymer molecule and which is modified to contain from 5 to 75% by weight of chemically bonded O—CH_2—CH_2—units in the polymer molecule.

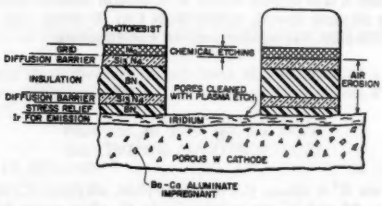
4,272,612
EROSION LITHOGRAPHY TO ABRADE A PATTERN ONTO A SUBSTRATE

David W. Oliver, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 37,258, May 9, 1979, Pat. No. 4,237,209. This application May 12, 1980, Ser. No. 149,205

Int. Cl.³ G03C *5/00*; B24B *7/00*

U.S. Cl. 430—323 **11 Claims**



1. The method of making a precise pattern on a substrate, comprising the steps of:

(a) forming a first layer on said substrate,

(b) forming a second layer on the first layer,

(c) forming a photo-resist layer on the second layer,

(d) exposing the photo-resist layer with means to form said pattern, followed by a developing process which selectively removes part of the photo-resist layer to expose openings of said pattern,

(e) removing the second layer in said openings,

(f) using air blasting with an abrasive powder to remove the first layer in said openings, with the photo-resist and the second layer acting together as a mask;

the improvement wherein for step (f) a special elongated nozzle and scanning provides substantially uniform abrasion over the entire exposed surface of said first layer, wherein the nozzle has an exit which is relatively long in one dimension and narrow in the orthogonal dimension to provide a substantially uniform velocity of the abrasive powder along the long dimension, and the scanning of the pattern-substrate structure with respect to the nozzle comprises successive passes in a direction generally perpendicular to the long dimension of the projection of the nozzle.

4,272,613
COLOR PHOTOGRAPHIC PROCESS

Haruo Shibaoka, and Junkichi Ogawa, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 19, 1980, Ser. No. 151,078

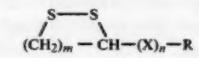
Claims priority, application Japan, May 18, 1979, 54-61344

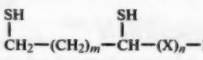
Int. Cl.³ 430 *380, 384, 469*; G03C *7/00*

U.S. Cl. 430—364 **26 Claims**

1. A color photographic process for simultaneously producing silver image and dye image which comprises

developing an imagewise exposed silver halide photographic material containing a dye-forming coupler using a color developer solution containing components (1) an aromatic primary amino color developing agent, (2) a 1-aryl-3-pyrazolidone compound having two substituents at the 4-position, and (3) at least one compound selected from compounds represented by the formulae (I) and (II)


(I)


(II)

wherein X represents a hydrocarbon group having 1 to 6 carbon atoms; R represents a carboxylic acid group, a water-soluble carboxylic acid salt group, a water-soluble carboxylic acid ester group, or a water-soluble carboxylic acid amide group; m is 1 or 2; and n is 0 or 1,

and then fixing the photographic material using an acid hardening fix solution.

4,272,614
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroyuki Mifune, and Shigeo Hirano, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

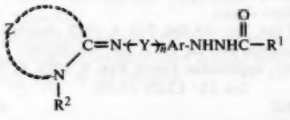
Filed Dec. 20, 1979, Ser. No. 105,689

Claims priority, application Japan, Dec. 28, 1978, 54-82

Int. Cl.³ G03C *1/06*

U.S. Cl. 430—441 **30 Claims**

1. A silver halide photographic light-sensitive material having at least one silver halide photographic emulsion layer comprising substantially surface latent image type silver halide grains, and containing in said photographic emulsion layer or at least one of other hydrophilic colloid layers a compound represented by the following general formula (I):


(I)

wherein R^1 represents a hydrogen atom, an aliphatic group containing only carbon and hydrogen atoms which may be substituted or an aryl group which may be substituted; Ar represents a divalent aryl group which may be substituted; Y represents a divalent linking group containing a carbonamido or a sulfonamido group; n represents 0 or 1; R^2 represents a hydrogen atom, an aliphatic group containing only carbon and hydrogen atoms which may be substituted or an aryl group which may be substituted; and Z represents a non-metallic atomic group necessary to form a 5-membered or 6-membered heterocyclic ring together with the

linkage.

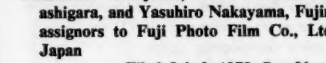
4,272,615

PHOTOGRAPHIC LIGHT-SENSITIVE ANTISTATIC CONTAINING MATERIAL

Masakazu Yoneyama; Shinzo Kishimoto, both of Minami-ashigara, and Yasuhiro Nakayama, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 3, 1979, Ser. No. 54,492
Claims priority, application Japan, Jul. 3, 1978, 53-80657
Int. Cl.[3] G03C *1/78*
U.S. Cl. 430—527 **10 Claims**

1. A photographic light-sensitive element comprising at least one silver halide emulsion layer and containing in at least one layer thereof a compound represented by the following formula:



wherein R_f represents a perfluoroalkenyl group containing 3, 6, 9 or 12 carbon atoms, n represents an integer of 3 to 50, and Y represents a hydroxy group or an organic residue containing 1 to 18 carbon atoms, said compound being present in an amount of about 0.005 to 20 g per square meter of said element.

4,272,616

PHOTOGRAPHIC RADIATION-SENSITIVE MATERIALS HAVING IMPROVED ANTISTATIC PROPERTY

Shinzo Kishimoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 7, 1979, Ser. No. 46,279
Claims priority, application Japan, Jun. 7, 1978, 53/68636
Int. Cl.[3] G03C *1/78*
U.S. Cl. 430—529 **10 Claims**

1. A photographic sensitive material having an improved antistatic property which comprises a nonionic polyoxyethylene surface active agent and at least one of an alkali metal thiocyanate, alkali metal and alkaline earth metal iodide, alkali metal and alkaline earth metal perchlorate and alkali metal periodate in at least one layer.

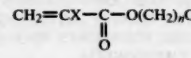
4,272,617

IMMOBILIZATION OF ENZYMES OR BACTERIA CELLS

Isao Kaetsu; Minoru Kumakura, and Masaru Yoshida, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

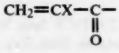
Continuation of Ser. No. 765,604, Feb. 4, 1977, abandoned. This application Jul. 26, 1979, Ser. No. 60,867
Claims priority, application Japan, Feb. 9, 1976, 51-13083
Int. Cl.[3] C12N *11/04*
U.S. Cl. 435—182 **4 Claims**

1. A process for producing a composition containing insolubilized enzyme and/or insolubulized bacterial cells, comprising mixing an aqueous solution of enzyme and/or an aqueous dispersion of bacterial cells with at least one hydrophobic, vitrifiable monomer, said hydrophobic, vitrifiable monomer or monomers comprising more than 76% by weight of all monomers present, and irradiating the resulting mixture by means of an ionizing radiation to polymerize the monomer, the irradiation being carried out at a temperature of less than −10° C., wherein the hydrophobic, vitrifiable monomer or monomers are compounds having a formula selected from the group consisting of:

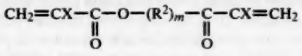


(a)

wherein X is H or methyl, R^1 is H or

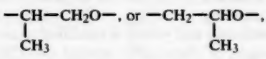


wherein X is as defined above, and n is an integer of 4 to 10;

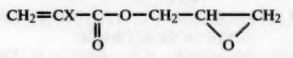


(b)

wherein X is as defined above, R^2 is $-CH_2CH_2O-$,

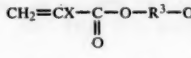


and m is an integer of 1 to 3;



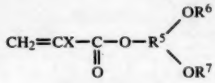
(c)

wherein X is as defined above;



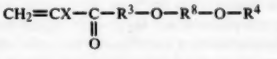
(d)

wherein X is as defined above, R^3 is straight chain or branched chain alkylene having carbon from 1 to 10 atoms, and R^4 is vinyl or alkyl having carbon from 1 to 10 atoms;



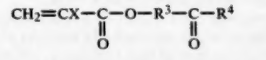
(e)

wherein R^5 is alkane (C_1 to C_5)-yl-ylide, alkylene (C_1 to C_5) amino, R^6 and R^7 are independently H, alkyl group having from 1 to 5 carbon atoms, alkylamino group having from 1 to 5 carbon atoms, hydroxyalkyl group having from 1 to 5 carbon atoms, allyl or vinyl;



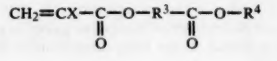
(f)

wherein X, R^3 and R^4 are as defined above, R^8 is the same as R^3, R^3 and R^8 being the same as or different from each other;



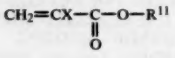
(g)

wherein X, R^3 and R^4 are as defined above;



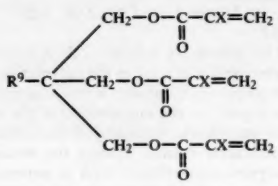
(h)

wherein X, R^3 and R^4 are as defined above;



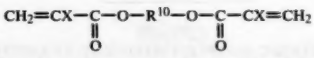
(i)

wherein X is as defined above, and R^{11} is benzyl, toluyl, xylyl, phenyl, furfuryl, naphthyl, phthalyl, cyclohexyl, cyclopentyl, cycloheptyl, cyclobutyl, pyridyl or 3-oxopyrrolidinyl;



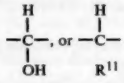
(j)

wherein X is as defined above, and R^9 is ethyl or propyl; and



(k)

wherein X is as defined above, and R^{10} is isopropylene, isobutylene, branched chain alkylene having from 1 to 5 carbon atoms,



wherein R^{11} is as defined above.

4,272,618

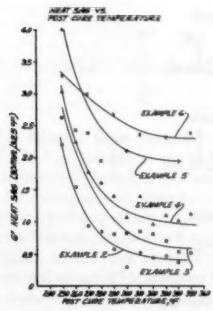
HEAT STABLE REACTION INJECTION MOLDED ELASTOMERS

Richard J. G. Dominguez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,101

Int. Cl.³ C08G *18/14, 18/32, 18/82*

U.S. Cl. 521—160 **10 Claims**



1. A reaction injection molded polyurethane elastomer having significantly improved properties comprising a cured reaction product of polyhydric polyethers of above about 500 molecular weight, a chain-extender and an aromatic polyisocyanate, said curing comprising subjecting said reaction product to an ambient temperature of from about 290° F. to 425° F. for a length of time sufficient to achieve an improvement in properties and wherein the polyisocyanate and chain-extender are chosen from products which yield an isocyanate chain-extender reaction product with a glass transition temperature of above about 325° F. and wherein the polyol is chosen from those products which do not significantly adversely affect the glass transition temperature of the isocyanate chain-extender reaction product.

4,272,619

PROCESS FOR THE PRODUCTION OF MODIFIED POLYETHER POLYOLS AND THEIR USE IN PROCESSES FOR THE PRODUCTION OF POLYURETHANE PLASTICS

Gerhard Balle; Hansjürgen Rabe, both of Leverkusen, and Peter Vehlewald, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,901

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915610

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—169 **10 Claims**

1. A process for the production of modified polyether polyols by the free radical polymerization of

I. 1 to 60 parts by weight of a mixture of:

(A) 20 to 99.9% by weight of acrylonitrile,

(B) 0 to 80% by weight of styrene,

(C) 0.1 to 10% by weight of an α,β-unsaturated monocarboxylic or polycarboxylic acid and

(D) 0 to 20% by weight of one or more other copolymerizable, olefinically unsaturated compounds;

II. 99 to 40 parts by weight of a polyether polyol, in the presence of a free-radical forming polymerization initiator characterized in that the α,β-unsaturated monocarboxylic or polycarboxylic acid is used in the form of a salt with a primary, secondary or tertiary monoamine or polyamine.

4,272,620

POLYVINYL ALCOHOL-STYRYLPYRIDINIUM PHOTOSENSITIVE RESINS AND METHOD FOR MANUFACTURE THEREOF

Kunihiro Ichimura, Yokohama, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

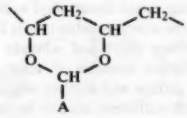
Filed Jul. 31, 1979, Ser. No. 62,490

Claims priority, application Japan, Aug. 9, 1978, 53/96803; Nov. 6, 1978, 53/136536

Int. Cl.³ C08F *8/44*

U.S. Cl. 525—61 **10 Claims**

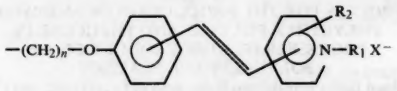
1. A photosensitive resin, comprising: a polyvinyl alcohol or a partially hydrolyzed polyvinyl acetate polymeric backbone containing units of the formula:



wherein A is a photosensitive substituent selected from the group consisting of

(A) a group of the generic formula:

wherein, R represents one member selected from the class consisting of a hydrogen atom, alkyl groups and lower hydroxyalkyl groups, R′ one member selected from the class consisting of a hydrogen atom and alkyl groups and (B) a group of the generic formula:



wherein, R_1 represents one member selected from the class consisting of a hydrogen atom, alkyl groups and aralkyl groups, R_2 one member selected from the class consisting of a hydrogen atom and alkyl groups, n an integer having a value between 1 and 6 inclusive and X^- a strongly acidic ion, and wherein the molar ratio of said photosensitive substituent to the vinyl alcohol or vinyl acetate units of said polyvinyl alcohol or partially hydrolyzed polyvinyl acetate polymeric backbone ranges from 0.5:99.5 to 10:90, said polyvinyl alcohol or partially hydrolyzed polyvinyl acetate polymeric backbone having a degree of polymerization of 400 to 3000.

4,272,621

WATER THINNABLE COATING COMPOSITIONS FROM AMINOALKYLATED INTERPOLYMERS

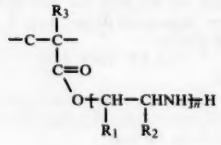
Russell T. McFadden, Freeport; Reuben L. Krause, Angelton, both of Tex., and R. Gregg Young, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 954,256, Oct. 24, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,330

Int. Cl.[3] **C08F** *8/32*

U.S. Cl. 525—355 **7 Claims**

1. In a water soluble acidified aminoalkylated vinyl carboxylic acid interpolymer, said interpolymer before acidification having pendant aminoalkyl groups of the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen and lower alkyl radicals of one to four carbon atoms and the average value of n is from about 1 to 3.5; R_3 is phenyl or lower alkyl and wherein said interpolymer before aminoethylation contains at least 3 weight percent pendant carboxyl groups and further wherein said interpolymer is acidifed with sufficient acid to impart water solubility thereto, the improvement wherein said aminoalkylated interpolymer is acidifed with a mixture of hydrochloric acid and at least 70 mole percent hydrobromic acid based on the total amount of acid added.

4,272,622

METHOD FOR PREVENTING POLYMER SCALE DEPOSITION IN THE POLYMERIZATION OF AN ETHYLENICALLY UNSATURATED MONOMER IN AN AQUEOUS MEDIUM

Hajime Kitamura, Ichihara; Toshihide Shimizu, Chiba, and Ichiro Kaneko, Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,414

Claims priority, application Japan, May 22, 1979, 54-62780; May 25, 1979, 54-64765

Int. Cl.[3] **C08F** *2/18, 2/22, 2/20, 2/24*

U.S. Cl. 526—62 **8 Claims**

1. A method for preventing polymer scale deposition on the walls of a polymerization reactor in the polymerization of an ethylenically unsaturated monomer in an aqueous medium which comprises, prior to the introduction of the monomer, water and other ingredients pertaining in the polymerization into the polymerization reactor, coating the surface of the walls of the polymerization reactor with an aqueous coating solution containing, as dissolved therein, (a) a water-soluble ionic polymer compound and (b) a water-soluble ionic dye having counteractive polarity to the polarity of the said ionic polymer compound and drying the thus coated surface.

4,272,623

MERCAPTOORGANOPOLYSILOXANE ELASTOMERS CATALYZED BY METALLIC COMPOUNDS IN THE PRESENCE OF PEROXIDES

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,298

Int. Cl.[3] **C08G** *77/06*

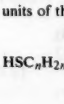
U.S. Cl. 528—15 **8 Claims**

1. A composition of matter consisting essentially of a material prepared by mixing

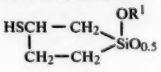
(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, trimethylsiloxane units, hydroxydimethylsiloxane units,

units of the formula

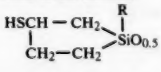
units of the formula



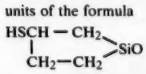
units of the formula



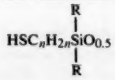
units of the formula



units of the formula



and units of the formula



wherein: R is a monovalent radical selected from the

group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radical; R^1 is methyl or ethyl; and, n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of greater than two mercapto-containing siloxane units per molecule and no more than 10 mole percent mercapto-containing siloxane units based on the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) an organic peroxide in an amount of from 0.5 to about 6 parts by weight per 100 parts by weight of (A);

(C) a transition metal compound selected from among those which react to provide oxidized metal ions in the presence of (B) and reduced metal ions in the presence of (A), in an amount of from about 0.1 to about 10 parts by weight per 100 parts by weight of (A); and

(D) a filler in an amount of from 0 to 200 parts by weight per 100 parts by weight of (A).

4,272,624

PROCESS FOR PRODUCING HIGH MOLECULAR WEIGHT DIORGANOPOLYSILOXANES FOR USE IN HEAT VULCANIZABLE SILICONE RUBBER COMPOSITIONS

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 463,435, Apr. 24, 1974, Pat. No. 3,937,684. This application Jun. 10, 1975, Ser. No. 585,675

The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

Int. Cl.³ C08G *77/04*

U.S. Cl. 528—37 **5 Claims**

1. A process for producing diorganopolysiloxane polymers having a viscosity from 1,000 to 200,000,000 centipoise at 25° C. where at least one of the organo groups is an aliphatic or haloaliphatic radical of at least 3 carbon atoms or more consisting essentially of

(a) reacting cyclic polysiloxanes of the formula

$$(RR'SiO)_4$$

at a temperature in the range of 0° to 90° C. in the presence of 5 to 300 parts per million of a catalyst selected from the class consisting of CsOH, and

$$(R^2)_4B^+ {}^-OSi(R^3)_3$$

where R^2 is selected from the class consisting of alkyl radicals of 1 to 8 carbon atoms, cycloalkyl radicals of 4 to 8 carbon atoms and phenyl, B is selected from the class consisting of nitrogen and phosphorous, R^3 is selected from the class consisting of alkyl radicals of 1 to 8 carbon atoms, cycloalkyl radicals of 4 to 8 carbon atoms, phenyl, siloxane chains of the unit formula $R_a{}^4SiO_{(4-a)/2}$ and mixtures thereof where R^4 is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a varies from 1.5 to 2.5 until equilibration is reached, and (b) neutralizing the catalyst in the reaction mixture after equilibrium has been reached where R is selected from the class consisting of methyl, ethyl, vinyl and phenyl, R' is $R^5CH_2CH_2$— and R^5 is a perfluoroalkyl radical of 1 to 6 carbon atoms.

4,272,625

THERMOTROPIC POLYESTER AMIDES

James E. McIntyre, Harrogate, and Alexander H. Milburn, Leeds, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 20, 1979, Ser. No. 59,449

Claims priority, application United Kingdom, Jul. 24, 1978, 30879/78; Jul. 24, 1978, 30880/78

Int. Cl.³ C08L *77/12*

U.S. Cl. 528—183 **12 Claims**

1. Fibre-forming polyesteramides capable of forming an optically anisotropic melt and having a melting point below the decomposition temperature of the polyesteramide consisting essentially of residues of aminophenols wherein at least 50% of the residues are selected from p-aminophenol and p-N-methylaminophenol and residues of aromatic dicarboxylic acids which contain one or more aromatic rings that form part of the main chain of the polyesteramide and are selected from residues of the group consisting of:

(a) acids with aromatic rings containing one or more unreactive monovalent constituents and which are connected to other residues in the main chain by coaxial or parallel and oppositely directed bonds,

(b) acids with aromatic rings connected to other residues in the main chain by two valency bonds which are neither coaxial nor parallel and oppositely directed,

(c) acids with aromatic rings which are one or more p-phenylene groups connected to other residues in the main chain through two valency bonds to two chemically different atoms,

(d) acids with unsubstituted aromatic rings which are connected to other residues in the main chain by coaxial or parallel and oppositely directed bonds,

(e) mixtures of at least two of the types of residues (a), (b), (c) and (d).

4,272,626

METHOD OF PRODUCING 1-EPI-2-DEOXYFORTIMICIN A AND INTERMEDIATES THEREFOR

Ronald E. Carney, Gurnee, and James B. McAlpine, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,018

Int. Cl.³ C07H *15/22*

U.S. Cl. 536—17 R **4 Claims**

1. 1-epi-Tetra-N-benzyloxycarbonylfortimicin A-2-epi-thiocarbonylimidazolide.

4,272,627

PHENYL-QUINOLIZINONES

Rene Imhof, Wittnau, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

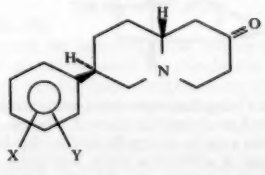
Division of Ser. No. 85,096, Oct. 15, 1979. This application May 12, 1980, Ser. No. 148,646

Claims priority, application Switzerland, Oct. 13, 1978, 10654/78; Aug. 3, 1979, 7156/79

Int. Cl.³ C07D *455/02*

U.S. Cl. 546—138 **4 Claims**

3. A compound of the formula



V

wherein X is hydrogen, fluorine, chlorine, lower alkoxy, lower alkyl or trifluoromethyl; and Y is hydrogen, fluorine, chlorine, lower alkoxy or lower alkyl,

its racemate or an enantiomer thereof.

4,272,628

NOVEL PYRIDINE DERIVATIVES

Edwin T. Edington, Cookham, and Alan C. White, Windsor, both of England, assignors to John Wyeth & Brother Limited, Maidhead, England

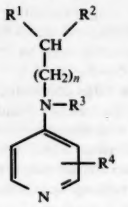
Continuation-in-part of Ser. No. 873,192, Jan. 30, 1978, Pat. No. 4,180,670. This application Jun. 22, 1979, Ser. No. 51,077

Claims priority, application United Kingdom, Feb. 2, 1977, 4354/77; Jul. 9, 1977, 28879/77

Int. Cl.³ C07D *213/32*

U.S. Cl. 546—284 **5 Claims**

1. A compound selected from those having the formula



(I)

and their pharmaceutically acceptable acid addition salts, wherein one of R^1 and R^2 is phenyl; naphthyl; phenyl substituted by one to two substituents selected from halogen, lower alkyl, lower alkoxy, lower alkylenedioxy and trifluoromethyl; thienyl and pyridyl, the other of R^1 and R^2 is lower alkyl, R^3 and R^4 are independently selected from hydrogen and lower alkyl and n is selected from 0 and 1.

4,272,629

NOVEL PROSTAGLANDIN INTERMEDIATES

Stanley M. Roberts, Macclesfield, England, assignor to Allen & Hanburys Limited, London, England

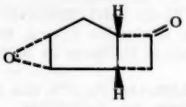
Continuation of Ser. No. 868,331, Jan. 10, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,502

Claims priority, application United Kingdom, Jan. 11, 1977, 952/77

Int. Cl.³ C07D *303/06, 493/10, 497/10*

U.S. Cl. 549—11 **9 Claims**

1. The compound of formula I,



(I)

and derivatives thereof in which the ketone group is protected.

2. A compound as claimed in claim **1** having the formula II,

(II)

wherein Y^1 and Y^2 together represent a protected keto group.

3. A compound as claimed in claim **2** wherein Y^1 and Y^2 together represent a cyclic or acyclic ketal or thio ketal group.

4. A compound as claimed in claim **3** wherein Y^1 and Y^2 together represent a group —A—R^1—A— where A represents an oxygen or sulphur atom and R^1 represents a C_{2-6} alkylene group.

7. A compond as claimed in claim **4** wherein Y^1 and Y^2 together represent a 1,3-dioxan or 1,3-dithian ring.

4,272,630

D-HOMOSTEROIDS

Leo Alig, 32 Liebrütistrasse, Kaiseraugst; Andor Fürst, 14 Magnolienpark, Basel; Marcel Müller, 10 Quellenweg, Frenkendorf, all of Switzerland; Ulrich Kerb, 7 Prinzregentenstrasse, Berlin, Fed. Rep. of Germany; Klaus Kieslich, 4 Strasse zum Löwen, Berlin, Fed. Rep. of Germany, and Rudolf Wiechert, 8a Petzower Strasse, Berlin, Fed. Rep. of Germany

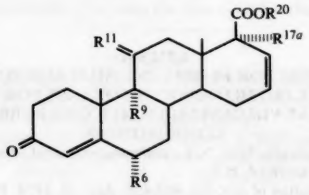
Filed Jan. 11, 1980, Ser. No. 111,424

Claims priority, application Switzerland, Jan. 24, 1979, 707/79

Int. Cl.³ C07C *69/75*

U.S. Cl. 560—6 **7 Claims**

1. D-homosteroids of the formula



wherein R^6 is hydrogen, fluorine, chlorine or methyl; R^9 is hydrogen, fluorine, chlorine or bromine; R^{11} is oxo or (α-H,β-OH) when R^9 is hydrogen, or R^{11} is oxo, (α-H,β-OH), (α-H,β-fluoro) or (α-H,β-chloro) when R^9 is fluorine, chlorine or bromine, with the proviso that, in the case of 9,11-dihalo compounds, the atomic number of the halogen in the 9-position is not less than the atomic number of the halogen in the 11-position; R^{17a} is acyloxy selected from the group consisting of alkanoyloxy containing from 1–7 carbon atoms, undecylenyloxy, oleyloxy, cyclopentylpropionyloxy, cyclohexylpropionyloxy, phenylacetyloxy, salicyloxy, acetylsalicyloxy and benzoyloxy; and R^{20} is lower alkyl or halo-(lower alkyl) and wherein the broken line in the 1,2-position denotes an optional carbon-carbon bond.

4,272,631

HYDROLYSIS OF 5-(BETA-METHYLMERCAPTOETHYL)-HYDANTOIN

Kurt H. Schaaf, Clearwater, Fla., and Herman Horn, Staten Island, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Feb. 25, 1980, Ser. No. 124,295

Int. Cl.³ C07C *149/247*

U.S. Cl. 562—559 **12 Claims**

1. A process for preparing methionine from 5-(beta-methylmercaptoethyl)-hydantoin comprising hydrolzing at superatmospheric pressure in an autoclave at a temperature of from about 105° C. to about 230° C., one mole of the hydantoin with a mixture of from about one to eight moles of a hydroxide of a monovalent cation selected from the group consisting of lithium hydroxide, sodium hydroxide, potassium hydroxide, ammonium hydroxide and alkyl substituted ammonium hydroxide and from about one to about five moles of zinc hydroxide in an aqueous medium containing from about 500 to 5,000 milliliters of water per mole of the hydantoin and thereafter recovering methionine from the hydrolysis reaction mixture.

4,272,632

NOVEL SILVER COMPLEXING AGENTS

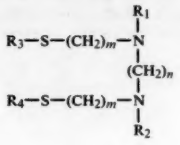
Krishna G. Sachdev, Beacon, N.Y., and Stanley M. Bloom, deceased, late of Waben, Mass. (by Arlene N. Bloom, executrix), assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 80,440, Oct. 1, 1979. This application Jun. 16, 1980, Ser. No. 159,910

Int. Cl.[3] C07C *87/14, 87/22, 91/12*

U.S. Cl. 564—501 3 Claims

1. A compound represented by the formula:



wherein m is 2 or 3; n is 2 or 3; R_1 and R_2 may be the same or different and may be H, alkyl, alkoxyalkyl, hydroxyalkyl or aminoalkyl having two to six carbon atoms; and R_3 and R_4 may be the same or different and may be alkyl, alkoxyalkyl or aminoalkyl having two to six carbon atoms.

4,272,633

PROCESS FOR THE MANUFACTURE OF TETRACHLOROCYCLOBUTENONE FROM HEXACHLOROCYCLOBUTENE

Günther Maahs, and Konrad Rombusch, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,205

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810398

Int. Cl.[3] C07C *45/27, 49/593*

U.S. Cl. 568—364 10 Claims

1. A process for preparing tetrachlorocyclobutenone from hexachlorocyclobutene, which comprises reacting (a) hexachlorocyclobutene with

I. (b) anhydrous sulphuric acid and (c) sulphur trioxide; or

II. (b) anhydrous sulphuric acid and (d) phosphorus pentoxide

at a temperature of 30°–140° C.;

the starting materials being present in the following molar ratios at the start of the reaction:

for I,

(a): (c)=0.67–10:1 and

(b): (c)=0.1–10:1;

and for II,

(a): (d)=0.67–10:1 and

(b): (d)=0.5–20:1.

4,272,634

PROCESS FOR THE PRODUCTION OF INTERMEDIATE OXIDATION PRODUCTS OF TOLUENES HAVING ETHER LINKAGES

Juichi Imamura, Chofu, Japan, assignor to Director-General of Agency of Industrial Science and Technology; Sanko Chemical Co., Ltd. and Nippon Soda Co., Ltd., all of Tokyo, Japan

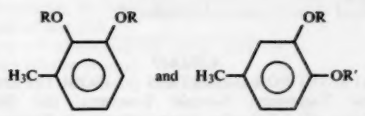
Division of Ser. No. 863,954, Dec. 23, 1977, Pat. No. 4,220,605. This application Dec. 11, 1979, Ser. No. 102,559

Claims priority, application Japan, Dec. 27, 1976, 51-158756; Dec. 27, 1976, 51-158757; Aug. 15, 1977, 52-97646

Int. Cl.[3] C07C *45/00, 37/00*

U.S. Cl. 568—432 5 Claims

1. In the process for the production of alcohols and/or aldehydes which comprises subjecting a toluene derivative having ether radicals of the general formula selected from



wherein R and R′ are hydrocarbyl groups with 1–20 carbon atoms which may carry an inert substituent, to oxidation reaction in the liquid phase with molecular oxygen the improvement wherein the said oxidation reaction is effected under the following combination of conditions: (a) the use, as solvent, of a lower saturated fatty acid and/or anhydride thereof; (b) a partial pressure of oxygen of 0.1–50 Kg/Cm^2 absolute; (c) a temperature in the range of 40°–200° C.; (d) in the presence of a soluble cobalt salt in the amount of at least 0.0005 moles per mole of toluene derivative; (e) in the presence of a bromine ion-supplying substance in an amount of 0.00001–0.5 moles per mole of toluene derivative and concurrently in an amount of 0.0002–20 moles per mole of cobalt salt; (f) in such a manner that the conversion rate of said toluene derivative does not exceed 90%.

4,272,635

PRODUCTION OF ALKALI METAL PHENATES

Sanford A. Siegel; Masao Yoshimine, and Che-I Kao, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 26, 1979, Ser. No. 60,945

Int. Cl.[3] C07C *39/24, 39/36*

U.S. Cl. 568—776 10 Claims

1. A process for the preparation of an alkali metal phenate which comprises the steps of reacting by mixing a molten chlorinated phenol with an aqueous caustic solution in a sealed, pressurized reactor vessel, under superatmospheric pressure, at a temperature from about 165° C. to about 200° C., until the caustic solution is sufficiently reacted with the substituted phenol, cooling and isolating the solid alkali metal phenate product by rapidly drying the aqueous reaction product mixture in a manner which permits short contact time with heat.

4,272,636

CHLORINATED PHENOL MOLD RELEASE AGENT

Leonard R. Thompson, and J. Kevin Kearney, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 106,991

Int. Cl.[3] C07C *39/36*

U.S. Cl. 568—776 8 Claims

1. A process for imparting mold release properties to a chlorinated phenol prepared by chlorinating phenol in the presence of a Friedel-Crafts catalyst, comprising adding to a molten chlorinated phenol, immediately on completion of the chlorination process and without distillation at least 0.5 weight percent of a glycol mono ether compound selected from the group consisting of mono-methyl, mono-ethyl, mono-butyl, mono-isobutyl or mono-phenyl ethers of ethylene, diethylene, triethylene or propylene glycols.

8. The process improvement of claim 1 or 2 wherein the chlorinated phenol is pentachlorophenol.

4,272,637

CATALYST FOR OXIDATION OF ISOBUTYLENE

Haruhisa Yamamoto; Nobuaki Yoneyama, and Shinichi Akiyama, all of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,302

Claims priority, application Japan, Dec. 28, 1977, 52-159553

Int. Cl.[3] C07C 45/35, 47/22

U.S. Cl. 568—780 8 Claims

1. A process for preparing methacrolein which comprises oxidizing isobutylene with molecular oxygen in the vapor phase at a temperature of 250° to 700° C. in the presence of a catalyst which has a composition of the formula

$$Mo_aBi_bFe_cCo_dNi_eP_fPb_gX_hO_i$$

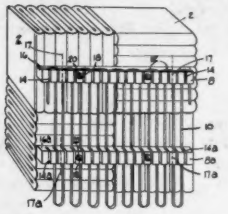
wherein X is at least one alkali metal element selected from the group consisting of K, Rb and Cs; a, b, c, d, e, f, g and h respectively represent the number of Mo, Bi, Fe, Co, Ni, P, Pb and X atoms, and a is 12, b is 0.1–10, c is 9–20, d is 0–12, e is 0–12 with the proviso that the sum of d and e is 0.5–15, f is 0.1–5, g is 0.05–8 and h is 0.01–5; and i is the number of oxygen atoms which satisfies the atomic valences of the other elements.

4,272,638

HEATER ELEMENT SUPPORTS FOR USE WITH FIBROUS BLOCK INSULATIONS

Anthony E. Cimochowski, Sedalia, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 16, 1979, Ser. No. 21,051
Int. Cl.[3] F27D *11/02*; H05B *3/06*
U.S. Cl. 13—25 34 Claims



1. A heater element support device to support electrical heater elements and to be used in conjunction with a block of fibrous thermal insulation which is adapted to be secured to a wall of a heated chamber by means of an attaching element attached to the cold face of said block, which device comprises:

(a) a bar shaped member having heater element securing means disposed longitudinally along said member; and

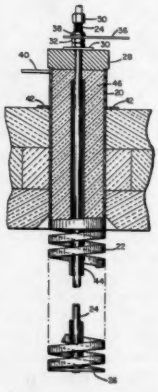
(b) member securing means integral with said block and penetrating the hot face of said block at only a single location to releasably secure said member in a position abutting said hot face of said block.

4,272,639

HELICALLY WOUND HEATER

Jacob H. Beck, Waban, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed Aug. 1, 1979, Ser. No. 62,757
Int. Cl.[3] H05B *3/14*
U.S. Cl. 13—25 19 Claims



1. A high temperature electrical resistance heater adapted for use within a high temperature furnace and comprising:

an elongated tubular element including:

a first axially extending helical section of high resistance and adapted for disposition within a furnace chamber, and having helical turns spaced from one another;

a second axially extending tubular section contiguous with and electrically and thermally joined to said first section and of low resistance and adapted for disposition external to the furnace chamber;

an elongated rod of low resistance disposed coaxially within and substantially coextensive with said tubular element;

a member of low resistance electrically and mechanically connecting the end of said first section to the confronting end of said rod;

means for maintaining the coaxial position of said rod within said tubular element;

means for maintaining said helical section in compression; and

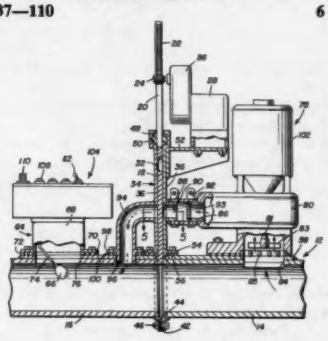
means for electrically connecting an end of said second section and confronting end of said rod to a power source.

4,272,640

AUTOMATIC SEWAGE VALVE

William J. Baumbach, Box 117, Fairfax Station, Va. 22039

Filed Jun. 19, 1979, Ser. No. 49,934
Int. Cl.[3] G05D *11/00*
U.S. Cl. 137—110 6 Claims



1. A valve for installation in a sewer line extending from a house or other building structure to prevent back flow of sewage into the house, said valve including a reciprocal gate mounted for movement between a closed position and an open position, a housing for said gate, said housing including wiper seal means adjacent the sewer pipe to clean the surfaces of the gate during reciprocation and to seal the gate in relation to the flow path of sewage, and means automatically moving said gate to its position in response to conditions of sewage flow in the sewer line on the downstream side of the valve in relation to the house or other building structure, bypass means associated with the valve for communicating the portions of the sewer line on each side of the valve, said bypass means including pump means for pumping sewage from the upstream side of the valve to the downstream side thereof in relation to the house when the gate closes thereby enabling sewage producing facilities in the house to be used in a normal manner when the valve is in closed position, said bypass means including a conduit, said gate including an aperture alignable with the conduit to automatically open the conduit when the gate is closed, said pump means including a chopper unit for reducing sewage particle size entering the pump means.

4,272,641

TANDEM JUNCTION AMORPHOUS SILICON SOLAR CELLS

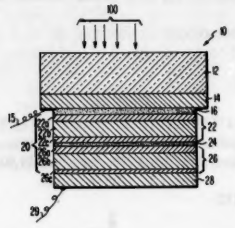
Joseph J. Hanak, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 31,460, Apr. 19, 1979, abandoned. This application Jan. 4, 1980, Ser. No. 109,637
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—249 18 Claims

1. An amorphous silicon solar cell comprising:

an active body having a first major surface and a second major surface opposite to said first major surface, wherein said active body comprises a plurality of layers of hydro-

genated amorphous silicon each having regions of differing conductivity type, each of said layers forming a photovoltaic generator, said layers being arranged in stacked configuration such that the photovoltages from each of said layers is added, and a transparent, high work function metal cermet layer forming a tunnel junction between



each adjacent pair of layers of hydrogenated amorphous silicon;

a transparent high work function metal cermet contacting said first major surface; and

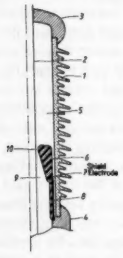
means for electrically contacting said last mentioned transparent high work function metal cermet.

4,272,642

GAS-INSULATED HIGH-VOLTAGE BUSHING WITH SHIELD ELECTRODE EMBEDDED IN AN ANNULAR INSULATING BODY

Ake Classon, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Sep. 10, 1979, Ser. No. 74,236
Claims priority, application Sweden, Sep. 13, 1978, 7809619
Int. Cl.[3] H01B *17/26, 17/42*
U.S. Cl. 174—31 R **10 Claims**



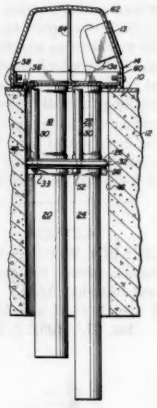
1. In an electrical high-voltage bushing for a metal-enclosed, pressure gas insulated switchgear, which bushing includes an elongated hollow tubular insulator, a centrally located current conductor, the space between the conductor and the inner surface of the tubular insulator being filled with a pressurized insulating gas, the bushing further including a metal flange connected to one of the ends of the tubular insulator for connecting the bushing to a bushing opening in the ground metal enclosure of a switchgear, and an annular shield electrode positioned within the space between the conductor and the inner surface of the tubular insulator near the metal flange, the shield electrode being electrically connected to the metal flange, the improvement wherein an annular insulating body is positioned in said space between the conductor and the inner surface of the tubular insulator near the metal flange, said shield electrode being at least partially embedded within said annular insulating body, said annular insulating body being composed of a material which displays a permittivity several times higher than the permittivity of the insulating gas within said space, said annular insulating body being connected to said metal flange and extending away therefrom a distance further than the distance between said shield electrode and said metal flange, the volume of said annular insulating body located beyond said shield electrode with respect to said metal flange being several times greater than that of said shield electrode, said annular insulating body including a field-controlling upper portion remote from said metal flange which includes an inner side which extends towards said central current conductor so as to form a tapering annular space between said current conductor and said field-controlling upper portion in a direction away from said metal flange.

4,272,643

FIRE RESISTANT FITTING

James C. Carroll, Hamilton, Ohio; Donald L. Chapman, Liberty, Ind.; Stephen L. Flee, Oxford, and Gilbert A. McGoldrick, Hamilton, both of Ohio, assignors to Square D Company, Palatine, Ill.

Filed Nov. 15, 1978, Ser. No. 961,075
Int. Cl.[3] H02G *15/04*
U.S. Cl. 174—48 **10 Claims**



1. An electrical fitting assembly for insertion in a floor passage extending through a floor, the improvement comprising:

a pair of plates, each plate having a periphery shaped and dimensioned to be received in said floor passage, each plate also having an aperture adapted to receive a conduit;

a first conduit received within said aperture in a first of said plates and secured to said first plate, said first conduit extending in an opposite direction from the second of said plates;

a second conduit received within said aperture of said second plate and secured to said second plate, said second conduit extending in an opposite direction from said first plate, said first conduit aligned with said second conduit;

a compressible material located between said plates in a plane between said first and second conduits, said material having a passage therein aligned with said conduits to enable the extension of wiring through said first and second conduits, said material adapted to expand inwardly about the entire perimeter of said passage upon exposure to sufficient heat in order to completely seal said passage about a wire extending therethrough;

means extending through said first plate and engaged in said second plate for connecting said first plate to said second plate and for readily moving said second plate towards said first plate upon installation of said assembly to compress said material and expand said material radially outward for sealing the periphery of said passage in said floor,

whereby said assembly is secured in said floor passage; and

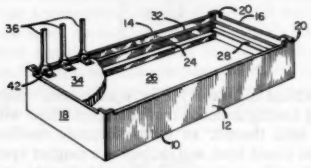
a third plate having an aperture therein receiving said first conduit extending from said first plate and secured to said first conduit with said third plate having a perimeter larger than said passage through said floor for overlapping said passage.

4,272,644

ELECTRONIC HYBRID CIRCUIT PACKAGE

Ronald C. Visser, Bedford; G. James Estep, Georgetown, and Alan S. Esbitt, Lynnfield, all of Mass., assignors to Hybrid Systems Corporation, Bedford, Mass.

Filed Sep. 27, 1979, Ser. No. 79,581
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 FP **6 Claims**



1. A hybrid circuit package comprising a ceramic substrate, a film circuit on at least one surface of the substrate, one or more monolithic chips mounted on the substrate and wire-bonded to the film circuit, an array of terminal pins disposed along at least one edge of the substrate and affixed to the substrate by respective pin clips, and wire bonds interconnecting the terminal pins to the circuit;

a shell of generally rectangular configuration having a top wall and four side walls defining an interior space accommodating the hybrid circuit and including:

first means integral with the shell engaging and supporting the substrate a predetermined distance from the inner surface of the top wall;

second means integral with the shell accommodating the terminal pins and associated pin clips; and

third means integral with the shell to provide a bonding surface around the perimeter of the substrate; and

an encapsulate bonded onto at least the perimeter of the outer surface of the substrate and bonded onto the third means and around the portions of the terminal pins at the second integral means and operative to seal the package and rigidly retain the terminal pins extending therethrough.

4,272,645

ELASTOMERIC MOLDED STRAIN RELIEF

Boleslaw Kornatowski, Elizabeth, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 29, 1980, Ser. No. 116,510
Int. Cl.³ H01R *13/58*
U.S. Cl. 174—65 G **8 Claims**

1. A molded elastomeric strain relief to extend longitudinally through an opening in a wall of a housing, the wall having a predetermined thickness, the housing comprising a barrier extending across a first side of the opening and comprising an outwardly facing surface forming part of the periphery of the opening and an inwardly facing surface spaced from the outwardly facing surface by a predetermined first distance, the opening further being defined by an edge portion of the wall spaced from the outwardly facing surface by a second predetermined distance, the strain relief comprising:

an entrance end and an external end longitudinally spaced from the entrance end;

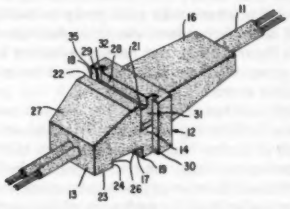
a central portion extending longitudinally along the strain relief between the entrance end and the exernal end and having a cross-section for substantially filling the opening;

a first shoulder extending transversely relative to the longitudinal direction of the strain relief at a location intermediate the ends and on a first side of the strain relief to abut against the outwardly facing surface to prevent the strain relief from being inserted too far into the opening;

a second shoulder at one end of the central portion and facing in the opposite direction from the first shoulder and extending transversely relative to a second side of the strain relief opposite the first side to engage the inner surface of the wall when the strain relief is fully inserted into the opening to prevent the strain relief from being easily removed from the opening;

a projection extending from the first side of the strain relief offset closer to the entrance end than the second shoulder is and spaced from the first shoulder towards the entrance end by a distance substantially equal to the first distance to form a trough in the strain relief between the projection and the first shoulder, whereby the outwardly facing surface and the inwardly facing surface on the barrier are clasped in the trough when the strain relief is in position in the opening;

a beveled surface on the second side of the strain relief extending from the height of the second shoulder toward the first side, whereby the portion of the strain relief



adjacent the entrance end is tapered so that the extremity of the entrance end of the strain relief is smaller than the opening, to permit the tapered portion of the strain relief to be inserted at an angle into the opening, the distance between the bottom of the trough adjacent the first shoulder and the distal edge of the second shoulder being greater than the distance between the barrier and the edge portion of the wall;

a third shoulder extending substantially parallel to and in the same direction relative to the strain relief as the second shoulder and spaced from the second shoulder toward the external end of the strain relief to define the other end of the central portion, the cross-section of the central portion substantially conforming in shape to the shape of the opening; and

side portions of the strain relief along third and fourth mutually opposite sides of the strain relief adjacent the second shoulder and facing away from the entrance end, whereby pressure can be applied to the side portions to force the tapered portion of the strain relief adjacent the second shoulder far enough into the opening to permit the second shoulder to engage the inner surface of the wall with the strain relief in position such that the projection locks behind the inwardly facing surface of the barrier and the second and third shoulders lock on opposite sides of a portion of the edge of the wall immediately adjacent the opening.

4,272,646

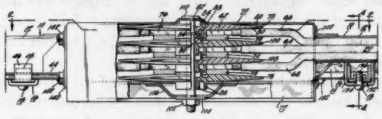
BUS CONDUIT ELECTRICAL DISTRIBUTION SYSTEM

Elmer T. Carlson, Port St. Lucie, Fla., assignor to Broadhill Development Corporation, Farmington, Conn.

Continuation-in-part of Ser. No. 877,595, Feb. 15, 1978, Pat. No. 4,213,003, which is a continuation-in-part of Ser. No. 755,446, Dec. 29, 1976, Pat. No. 4,112,249, which is a continuation-in-part of Ser. No. 554,684, Mar. 3, 1975, Pat. No. 4,008,365. This application May 19, 1980, Ser. No. 151,460

Int. Cl.[3] H02G 5/08

U.S. Cl. 174—88 B 1 Claim



1. An electrical distribution system comprising:

(a) an elongated tray and cover, both of U-cross section;

(b) between them, but protruding beyond their ends, a set of bus bars of which has substantially the same cross section both in shape and dimensions, which cross section is substantially that of a rectangle, the bus bars including ones of different electrical phase from each other, all those of the one phase when within the tray and cover being on the one level side by side with their edges horizontally adjacent to each other and their lower and upper faces substantially on the same respective levels with each other, the bus bars in any one phase including a plurality of groups of bus bars, with each group including three individual bars, each one of the three individual bars when within the tray and cover having insulation around it and each group when within the tray and cover also having insulation around it as a group;

(c) a metal joint box at an end of the tray and cover, the joint box also itself having a tray and cover and within it one set of ends of the bus bars in condition bare of insulation and all terminating along the one perpendicularly transverse line, with all those in any particular phase terminating at one particular level for such ends of that particular phase in side by side position;

(d) a second tray and cover and set of bus bars having the same attributes as stated for the first such items but located on the opposite side of the joint box and having its set of bus bar ends extending in from the opposite end of the joint box to end in a perpendicularly transverse line on the other side of the first and spaced from it and the individual ends in any one phase of the one set of bus bars ending on the same horizontal level as the individual ends in the same phase of the other set of bus bars;

(e) bridging plates within the joint box of which there is one and only one such plate for each phase and this extends across between an overlapping contacting position relative to all the bared bus bars of that phase in the one set of bus bars within the joint box and a corresponding overlapping contacting position relative to the bared bus bars of that phase in the other set of bus bars within the joint box, and each such plate having a hole in its center;

(f) insulating plates in the joint box, one between each adjacent pair of phases and one on the outside above and below the upper and lower phases respectively, each insulating plate having a hole in its center in registry with the holes in the bridging plates and around that hole having on the one side a protruding single ridge concentric with the hole and on the other side a double ridge concentric with the hole, with the single ridge on one plate adapted to fit into the valley between the concentric ridges on the adjacent plate; and

(g) a single bolt extending through all the holes and a single nut to cooperate with the bolt to hold everything together in the joint.

4,272,647

SPEECH AID APPARATUS

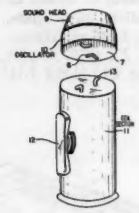
Ivar Veit, Auf dem Schild 6, 2400 Lübeck; Liesbet Sickel, Dr. Ringen Str. 49, 5063 Overath, and Konstantin Gatzsch, Hinter den Wiesen 15, 5 Köln 91, all of Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,290

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818144

Int. Cl.[3] A61F 1/20

U.S. Cl. 179—1 AL 8 Claims



1. A speech-aid apparatus for laryngectomees, comprising: a first housing having disposed therein a sound head with a hard diaphragm held therein, an electrodynamic oscillator connected to the sound head and including a magnet system with an oscillator coil, a plunger, connected thereto and a soft diaphragm vibrationally connected to the first housing through the plunger, whereby the soft diaphragm sets the hard diaphragm into vibration; and a second housing for a power supply and an operating switch and means for releasably mechanically and electrically connecting the two housings comprising a bayonet joint wherein the magnet system comprises a pot-type magnet arrangement having a central opening and comprising an axially polarized, very thin annular permanent magnet held between two pole rings made of a soft magnetic material and having rotational symmetry, the upper one of the two rings being pot-shaped, with a downwardly open annular gap concentric with the central opening and the oscillator coil projecting into it, and wherein the plunger is connected to the oscillator coil and extends freely through the central opening of the pot-type magnet arrangement.

4,272,648

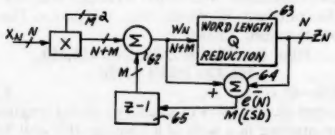
GAIN CONTROL APPARATUS FOR DIGITAL TELEPHONE LINE CIRCUITS

Bhagwati P. Agrawal, Shelton, and Kishan Shenoi, Fairfield, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,110

Int. Cl.[3] G06F 7/39

U.S. Cl. 179—1 VL 23 Claims



1. A gain control circuit for operating on a digital input signal of the type comprising a plurality of digital words each having the same number of bits with each word manifesting a weighted value of an analog signal, said circuit comprising:

multiplier means having one input responsive to said digital input signal, and a second input adapted to receive a digital coefficient word indicative of a desired gain factor to be imparted to each of said digital input words, said coefficient word having a predetermined number of bits to

provide at an output of said multiplier means, a digital product signal, each word of which having a number of bits equal to the sum of said coefficient word bits and said digital input signal word bits,

logic means responsive to said product signal for obtaining at an output, an output signal comprised of output digital words, each having a number of bits equal to the number of bits of said digital input signal words, said logic means being operative to remove all of the least significant bits in said product signal not corresponding to said digital input signal word bits, whereby said output digital words each contain the same number of bits as said input digital word, and such that each of said output digital words include said gain factor,

summing means responsive to the output signal from said logic means and said least significant bits and operative to derive an error signal indicative of said least significant bits,

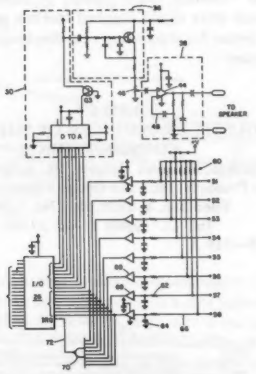
feedback control means responsive to said error signal and to the product signal obtained from the next input digital word for adding said error signal to said product signal to provide a compensated digital signal each word of which has the same number of bits as does each word of said product signal, said feedback control means including means for applying said compensated signal to said logic means to cause said logic means to operate on said product signal as compensated by said error signal.

4,272,649

PROCESSOR CONTROLLED SOUND SYNTHESIZER

Randall R. Pfeiffer, Costa Mesa, Calif., assignor to Williams Electronics, Inc., Chicago, Ill.

Filed Apr. 9, 1979, Ser. No. 28,079
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **3 Claims**



1. A method of synthesizing sound comprising the steps of:

(a) storing in a processor memory data from which the sound waveforms are to be synthesized and a program for causing said processor to produce digital representations of the sound waveforms,

(b) executing selective portions of said program utilizing selected data depending upon the sound waveform desired, including the substeps of:

(i) providing data lines connected to said processor, the logic state of said lines being externally controlled to select the portions of said program executed and the data utilized,

(ii) detecting a change in the logic state of said data lines,

(iii) causing said processor to poll said data lines whenever a change is detected thereby to control the operation of said processor,

(c) converting said digital representation to corresponding analog sound waveforms,

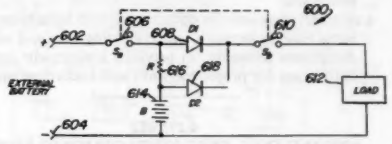
(d) applying said analog sound waveforms to audio means to produce the desired sounds.

4,272,650

POWER SUPPLY SYSTEM

Duane R. Bolgiano, Bala Cynwyd; Joel M. Benjamin, Jr., Pottstown, and Victor Meyer, Jr., Telford, all of Pa., assignors to International Mobile Machines Incorporated, Bala Cynwyd, Pa.

Division of Ser. No. 755,615, Dec. 29, 1976, Pat. No. 4,130,731. This application Oct. 16, 1978, Ser. No. 951,737
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—77 **5 Claims**



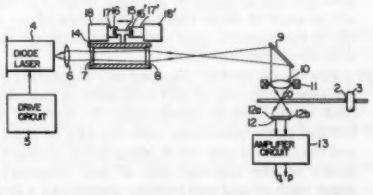
1. A portable telephone system comprising at least one subscriber station and at least one base station in selective communication with each other, a power supply network for supplying power to said telephone system, said power supply network comprising a primary high voltage power source and a secondary low voltage power source, means causing total suspension of power from said primary power source except during periodic intervals of time, whereby said primary power source is alternatively activated and inactivated, and means inhibiting said secondary power source from supplying power to said system while said primary power source is activated and permitting said secondary power source to supply power to said system while said primary power source is inactivated, said subscriber station having a memory means for storing an indication of the channel to which said system is tuned when said primary power source becomes inactivated, and said secondary power source supplying power substantially only to said memory means while said primary power source is inactivated, whereby said memory means retains the indication of said channel while said primary power source is inactivated.

4,272,651

OPTICAL SYSTEM HAVING DIODE LASER LIGHT SOURCE

Tomio Yoshida, Katano; Yoshinobu Nakata, Ikoma; Shunji Harigae, Neyagawa, and Toshio Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 24, 1979, Ser. No. 33,005
Claims priority, application Japan, Apr. 28, 1978, 53-51807; Aug. 25, 1978, 53-104081
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—112 **3 Claims**



1. An optical system for optically recording or reproducing information on or from the information tracks of an optically sensitive recording medium by a light beam, comprising:

a diode laser forming a light source, said laser having a junction plane and emitting a first light beam component in a direction perpendicular to a said junction plane and a second light beam component in a direction parallel to said junction plane;

a condenser lens disposed in a light emission path of said diode laser for collecting the first and second light beam components emitted by said diode laser;

a cylindrical lens assembly composed of at least a concave cylindrical lens and a convex cylindrical lens, each cylindrical lens having an axis of curvature in a direction perpendicular to said junction plane of said diode laser, said cylindrical lens assembly being disposed in succession to said condenser lens to receive the light output therefrom, and disposed such that only said second light beam component emitted from said laser undergoes optical treatment; and

a concentrating lens for constricting said light beam components passing through said collecting lens and said cylindrical lens assembly, to produce a narrowly constricted light beam for projection onto said recording medium.

4,272,652
MOVING COIL TYPE STEREOPHONIC PICKUP CARTRIDGE

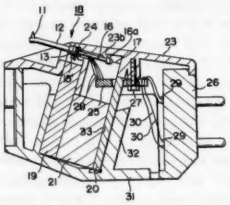
Masaru Ogikubo, Kokubunji, Japan, assignor to Nippon Atsudenki K.K., Mitaka, Japan

Filed May 23, 1979, Ser. No. 41,918

Claims priority, application Japan, May 25, 1978, 53-62450; Apr. 16, 1979, 54-45671

Int. Cl.³ H04R 9/16

U.S. Cl. 369—139 **11 Claims**



1. A moving coil type stereophonic pickup cartridge comprising:

(a) a cantilever which has a stylus mounted on a front end thereof,

(b) a front yoke which is arranged within an imaginary plane intersecting the axis of the cantilever,

(c) a rear yoke having a pair of branched portions which extend toward the front yoke parallel to the axis of the cantilever,

(d) a magnet for magnetizing the front yoke and the rear yoke,

(e) a pair of magnetic gaps which are formed within the front yoke, the rear yoke, and the branched portions of the rear yoke and are arranged at the right and left of the cantilever at such an angle that the directions of the magnetic flux in the magnetic gaps correspond to the groove wall of a 45/45 system record,

(f) a pair of coil bobbins attached to a supporting portion of the cantilever, one of said coil bobbins extending therefrom at an angle of substantially 45° from an imaginary vertical plane coinciding with the axis of the cantilever and the other of said coil bobbins being arranged symmetrically on the opposite side of said imaginary vertical plane, each of said coil bobbins comprising a first portion attached to the cantilever supporting portion and extending therefrom toward said magnet at the angle of 45° and a second portion formed integrally with said first portion and extending therefrom substantially parallel to the axis of the cantilever, and

(g) a moving coil wound only on each of said second portions of the coil bobbins and the moving coil-wound portions positioned and disposed as a whole within said air gaps, the axial directions of which are approximately parallel to the axial direction of the cantilever, whereby stereophonic reproduction is effected for a stereophonic record of the 45/45 system.

4,272,653
LOUDSPEAKER AND A METHOD OF PRODUCING THE SAME

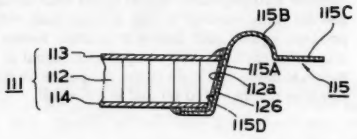
Mamoru Osato, Yokosuka, and Hiroshi Koizumi, Ohmiya, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,389

Claims priority, application Japan, Jun. 15, 1978, 53-72426

Int. Cl.³ H04R 7/02

U.S. Cl. 179—115 R **14 Claims**



1. A loudspeaker comprising:

a planar diaphragm, including first and second layers, and a core member sandwiched between said layers, said core member having an edge surface aslant relative to the direction of thickness thereof;

means for driving said diaphragm at a node portion of a divided vibration mode thereof in accordance with an electrical drive signal supplied thereto; and

support means for supporting said diaphragm and said driving means.

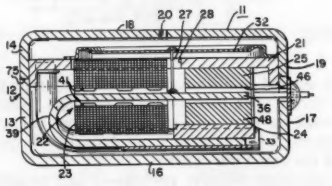
4,272,654
ACOUSTIC TRANSDUCER OF IMPROVED CONSTRUCTION

Elmer V. Carlson, Prospect Heights, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Jan. 8, 1979, Ser. No. 1,949

Int. Cl.³ H04R 11/00, 31/00

U.S. Cl. 179—119 A **3 Claims**



1. A transducer comprising in combination a case including a motor positioned therein, said motor comprising an armature, a self-supporting coil having a tunnel formed therein for receiving the armature, a U-shaped armature in said transducer, said armature having a pair of parallel extending arms positioned or joined together by a folded portion, said folded portion of said armature being formed in an arcuate shape, said coil including a tunnel or passageway formed through the center thereof, and ridges extending inwardly into said pas-

sageway to limit the movement of said armature to protect said armature against shock damage.

3. The method of fabricating a transducer, said transducer including a case and a motor positioned therein, said motor including an armature, a coil including a tunnel or passageway formed therein, a U-shaped armature, said armature having a pair of parallel extending arms positioned to be joined together by a folded portion and one of the armature arms being affixable in place and the other arm being free to vibrate, consisting of the steps of:

(a) forming ridges extending inwardly into said coil passageway;

(b) securing one arm of the armature in place;

(c) positioning shims along the vibratable arm of the armature;

(d) inserting the passageway of the coil around the shims and vibrating arm of the armature; and,

(e) affixing the coil in position in said case.

4,272,655

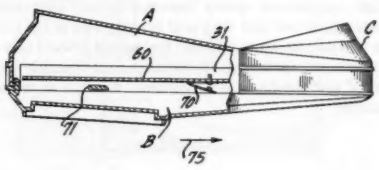
COMPACT TELEPHONE SET EMPLOYING SLIDABLE ACTUATED SUPERVISION SWITCHES

George W. MacKenzie, Middletown; Clifford W. Shackelton, Keyport, and Norbert E. Yankielun, Westfield, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,835

Int. Cl.[3] H04M 1/02

U.S. Cl. 179—159 15 Claims



1. In combination with a telephone instrument of the type having a telescoping operation wherein a first slidable housing section is slidably movable with respect to a second housing section to move to an extended position indicative of an off-hook condition, and a closed position indicative of an on-hook condition, the improvement therewith of apparatus for actuating supervisory switches associated with said instrument, comprising:

a first actuatable switching means positioned in said second housing section and having a first mechanically operated member for actuation of said first switching means in a first mode when said member is operated, said switching means operative in said first mode to provide a closed state, and in a second mode when said member is not operated, to provide an open position, and

first means positioned on said first slidable housing section to operate said mechanically operated member when said housing is moved to said off-hook position to cause said switching means to provide said first mode and said member not being operated to provide said second mode when said housing is moved to said second closed position indicative of an on-hook position.

4,272,656

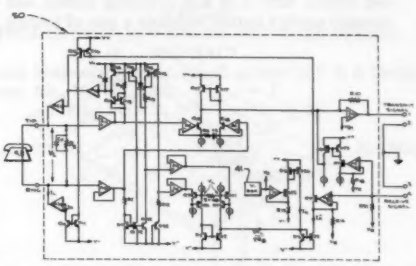
QUASI-RESISTIVE BATTERY FEED FOR TELEPHONE CIRCUITS

Yukio Nishikawa, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Apr. 5, 1979, Ser. No. 27,503

Int. Cl.[3] H04B 1/58

U.S. Cl. 179—170 NC 9 Claims



1. In an electronic circuit for replacing the hybrid transformer portion of the telephone system call-handling equipment, an electronic circuit for simulating the direct current characteristics of said transformer, comprising:

current amplifier means for supplying a loop current to a telephone subscriber loop;

voltage sensing means, connected across said subscriber loop, for sensing the voltage across said subscriber loop and for transferring said sensed voltage across a reference resistor, thereby developing a reference current through said resistor which is proportional to the voltage across said subscriber loop;

current generator means for supplying a current of constant value; and

current subtractor means, connected between the outputs of said voltage sensing means and said current generator means and the input of said current amplifier means, for subtracting said constant current from said reference current, the resulting current forming the input current to said current amplifier means, said current amplifier means thereby producing an amplified current proportional to the reciprocal of a constant resistance plus the resistance of said subscriber loop.

4,272,657

KEYBOARD ASSEMBLY FOR ELECTRONIC MUSICAL INSTRUMENTS

Masakatsu Iijima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 24, 1979, Ser. No. 6,178

Claims priority, application Japan, Jan. 26, 1978, 53-7297[U]; Jan. 26, 1978, 53-7298[U]; Jan. 26, 1978, 53-7299[U]; Jan. 26, 1978, 53-7300[U]; Jan. 26, 1978, 53-7301[U]; Jan. 26, 1978, 53-7302[U]; Jan. 26, 1978, 53-7303[U]

Int. Cl.[3] H01H 13/70; G10C 3/12

U.S. Cl. 200—5 A 40 Claims

1. An improved keyboard assembly for electronic musical instruments, comprising:

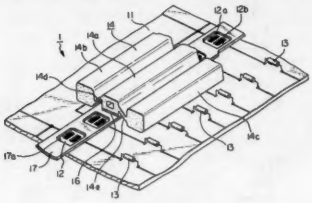
a keyboard frame carrying a first plurality of independently swingable keys arranged in side-by-side relationship to each other, each of which is provided with a downwardly projecting actuator;

holder block means including first and second holding sections;

a printed circuit base board carried by said holder block means having a top face on which is printed a given electric circuit including a second plurality of sets of fixed contacts, said sets being equal in number to said first plurality of keys, said sets being arranged in spaced side-by-

side relationship to each other at intervals corresponding to those of said keys such that each of said sets is associated with a respective one of said keys;

a movable contact made of a resilient material and including a center switching section which extends over all of said fixed contacts, said switching section having a bottom surface which faces said fixed contacts, and said movable contact further including electrode means disposed on said bottom surface of said switching section; and said movable contact further including a pair of holding sections which are arranged on opposite sides of and connected to said center switching section; and



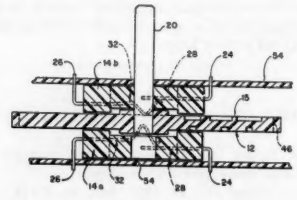
means for maintaining said movable contact in position relative to said printed circuit base board so that said movable contact electrode means is held in position above and spaced from said fixed contacts when none of said keys is depressed and so that when a key is depressed, a corresponding portion of said movable contact electrode means is locally brought into contact with its respective set of fixed contacts.

4,272,658

MULTI-CONTACT ROTARY SWITCH

John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 16, 1978, Ser. No. 961,165
Int. Cl.³ H01H *19/60*
U.S. Cl. 200—6 B **6 Claims**



1. A multi-contact rotary switch structure comprising essentially the following three components:

two side members, each having a body structure composed of insulating material in which are embedded a plurality of parallel-extending switch element pairs, each pair comprising one fixed and one movable conductor element which have aligned interengageable portions; and

a rotatable switch-controlling member mounted between the two side members and having a plurality of arcuate cam lobes on each of its sides, which lobes determine, in accordance with the position of the rotatable member, the contact or non-contact of each movable switch element with its paired fixed switch element;

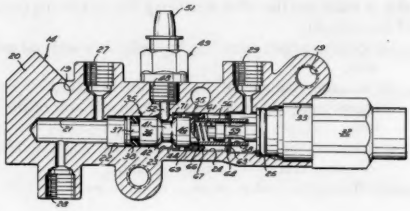
the side members of the switch structure having guiding channels formed therein, each of which laterally confines one of the movable switch elements so as to insure its alignment with the corresponding fixed switch element.

4,272,659

HYDRAULIC BRAKE WARNING SWITCH

Edward S. Orzel, Parma, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 21, 1979, Ser. No. 106,095
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—82 D **7 Claims**



1. A differential pressure sensing device comprising a housing, a bore in said housing, a piston mounted in said bore for axially slidable movement therein, a first fluid pressure chamber at one end of said bore, a second fluid pressure chamber at the other end of said bore, passage means connecting said first and second fluid pressure chambers to separate sources of fluid pressure, said bore having a first diameter at said first fluid pressure chamber, said bore having a second diameter at said second fluid pressure chamber greater than said first diameter, said piston having a portion in said first fluid pressure chamber having said first diameter, said piston having a cylindrical portion in said second fluid pressure chamber having a diameter less than said first diameter, an annular seal means making sealing contact with said piston cylindrical portion and with said bore at said second diameter and being axially slidable with respect to said bore and said piston, an abutment on said piston engageable by said seal means on movement of said seal member away from said second fluid pressure chamber, a helical compression spring mounted around said piston and engageable at one end with said housing and at the other end with said seal means to bias said seal means toward said second fluid pressure chamber, and switch means operable by movement of said piston a predetermined distance in either axial direction.

4,272,660

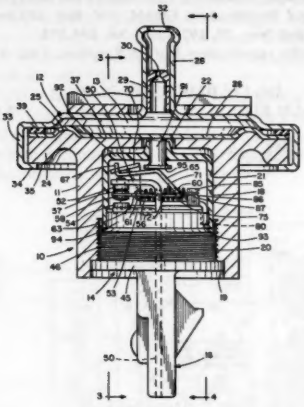
VACUUM OPERATED SWITCH

William R. Mayer, Rochester, and James R. Pescetto, Springfield, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jul. 11, 1979, Ser. No. 56,390
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 P **21 Claims**

1. A vacuum or pressure operated electric switch, comprising; a housing having axially aligned contact abutments, a first contact on at least one of the abutments, a first terminal electrically connected to the contact, an over-center contact blade having a second contact movable between a first position in engagement with the first contact and a second position in engagement with one of said abutments, a second terminal electrically connected to said contact blade, spring means biasing said contact blade away from a center position thereof between the first contact and another of said abutments, a non-resilient lever member in the housing directly engaging and supporting said contact blade for movement between said first and second positions, a diaphragm in said housing defining a vacuum or pressure chamber therein, and a plunger between the diaphragm and the lever member normally biasing said

lever in a direction to move the contact blade to one of said positions and when subjected to a predetermined vacuum or



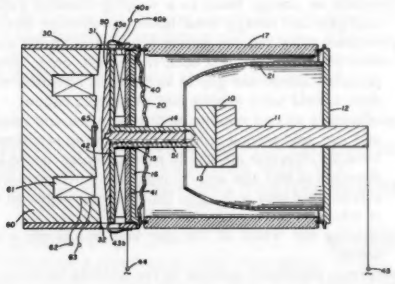
pressure in said chamber permitting the lever and spring to move the contact blade to the other of said positions.

4,272,661

HIGH SPEED VACUUM INTERRUPTER

Rolf Dethlefsen, Greensburg, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 9, 1978, Ser. No. 884,984
Int. Cl.[3] H01H *33/66, 53/00*
U.S. Cl. 200—144 B **16 Claims**



1. A high speed circuit interrupter comprising:

a pair of cooperable contacts;

an evacuated housing enclosing said pair of cooperable contacts and having an axis;

flexible contact support means for supporting one of said pair of contacts for movement along said axis of said housing and for forming a vacuum seal for said housing; the other of said contacts being secured to said housing and being immovable relative thereto; and

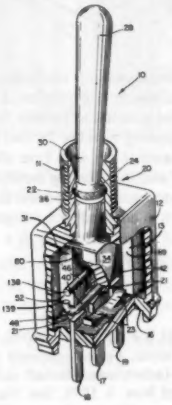
a Lenz coil fixed to the exterior of said housing and a conductive counterplate disposed outside said housing and closely coupled to said Lenz coil and fixed to said one of said pair of contacts, said Lenz coil being adapted to produce a strong repulsive force on said counterplate to move said counterplate and said one of said contacts away from said other of said pair of cooperable contacts, thereby to interrupt a current that is flowing through said pair of contacts; and said interrupter including no means for moving said one of said pair of contacts to interrupt a current that is flowing through said pair of contacts other than said Lenz coil and said counterplate.

4,272,662

TOGGLE SWITCH WITH SHAPED WIRE SPRING CONTACT

Kenneth Simpson, Lynnfield, Mass., assignor to C & K Components, Inc., Newton, Mass.

Filed May 21, 1979, Ser. No. 41,057
Int. Cl.[3] H01H *13/28*
U.S. Cl. 200—275 **26 Claims**



1. An electrical switch comprising:

a housing defining a chamber therein and having an orifice formed on a first side thereof;

a plurality of spaced electrical terminals mounted on a second side of said housing opposite of said first side, each one of said terminals having a first portion extending into said chamber a predetermined distance, and a second portion projecting outwardly from said housing;

a switch actuator extending through said orifice and into said chamber and confronting said plurality of terminals, said actuator having a portion external to said chamber and adapted to receive force to move said actuator, a middle portion residing within said orifice in oscillatory, unsecured contact with surfaces of said housing disposed on the perimeter of said orifice, and an actuator tip within said chamber movable in response to force applied to said external portion; and

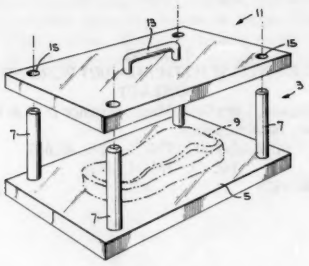
a wire spring contact disposed in engagement with said actuator tip within said chamber and adapted to be pivoted by movement of said actuator into one of an available plurality of discrete, preselected operating positions in which said contact is selectively electrically connected to at least one of said plurality of terminals when said contact is in at least one of said operating positions, said contact providing a spring bias operative alone to urge said middle portion of said actuator into contact with said orifice, and having a predetermined shape operative alone to determine said available plurality of preselected operating positions, said shape and said bias alone being operative to selectively retain said actuator tip in one of said preselected operating positions.

4,272,663

METHOD AND APPARATUS FOR COOKING

Robert E. Green, 909 N. Front St., Marquette, Mich. 49855

Filed Aug. 10, 1979, Ser. No. 65,643
Int. Cl.[3] H05B *6/80*
U.S. Cl. 219—10.55 E 13 Claims



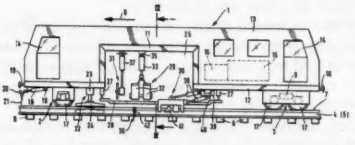
1. A cooking implement for cooking a cut of beef in a microwave oven including, in combination, a base formed of a thermoplastic material adapted to receive thereon a cut of beef for cooking, and a floating member formed of thermoplastic material, means upstanding on said base slideably receiving said floating member and said floating member sliding downwardly on said means into operative position in engagement with the cut of beef which is adapted to be disposed on said base, said entire implement being disposed in a microwave oven for cooking the cut of beef.

4,272,664

MOBILE RAIL WELDING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 3, 1978, Ser. No. 957,402
Claims priority, application Austria, Dec. 28, 1977, 9352/77
Int. Cl.[3] E01B *11/50, 31/18;* B23K *11/04*
U.S. Cl. 219—53 10 Claims



1. A mobile rail welding machine mounted on a track for mobility in an operating direction, the track being comprised of rails consisting of rail sections having abutting ends and ties supporting the rail sections, which comprises the combination of

(a) a heavy frame supporting a chassis capable of housing operating personnel,

(b) two undercarriages spaced from each other along the track and supporting the frame thereon, the frame defining an upwardly recessed operating space intermediate the undercarriages,

(c) a hydraulically driven flash butt welding device for welding the abutting rail section ends of a selected one of the rails, the welding device being mounted on the frame in the operating space intermediate the undercarriages,

(d) a hydraulically driven weld burr removal device mounted on the frame and extending into the operating space intermediate the undercarriages, and

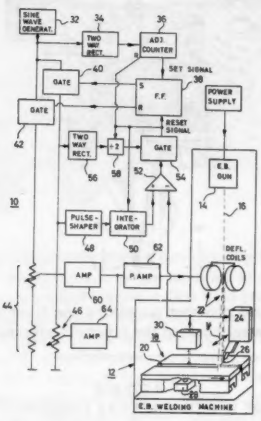
(e) a support means for the frame operable to relieve the track rails of the machine weight.

4,272,665

ENERGY BEAM WELDING A GAP OF VARYING WIDTH

Karl H. Steigerwald, Starnberg, Fed. Rep. of Germany, assignor to Steigerwald Strahltechnik GmbH, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,174
Claims priority, application United Kingdom, Dec. 5, 1977, 50579/77
Int. Cl.[3] B23K *15/00, 26/00*
U.S. Cl. 219—121 ED 8 Claims



1. An energy beam welding method for forming a weld seam along a gap of varying width defined by two workpiece edges to be welded together, said gap having a length direction, comprising the steps of:

directing an energy beam to a welding location including said gap, said energy beam having an average direction;

producing a first relative motion between said beam and said workpiece arrangement such that said average direction proceeds along said gap in said length direction to produce a weld seam joining said workpiece edges;

producing a second relative motion between said beam and said gap, said second relative motion being repetitive and having a direction essentially perpendicular to said length direction of said gap, and having a maximum peak-to-peak amplitude at least as large as the maximum expected width of said gap;

measuring the width of the gap and producing a width signal;

supplying additional material to the welding location;

controlling the rate of supply of additional material as a function of said width signal;

said second relative motion taking place during first time intervals, with said maximum peak-to-peak amplitude, and second time intervals, alternating with said first intervals, during which the peak-to-peak amplitude is smaller than said maximum amplitude, and wherein the ratio of said first time intervals to said second time intervals is varied as a function of said width signal.

4,272,666

FUSING ROLLS FIXING UNIT FOR COPYING MACHINE

Vittorino Collin, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 28, 1978, Ser. No. 964,358
Claims priority, application Italy, Dec. 1, 1977, 69709 A/77
Int. Cl.[3] H05B *1/00*
U.S. Cl. 219—216 8 Claims

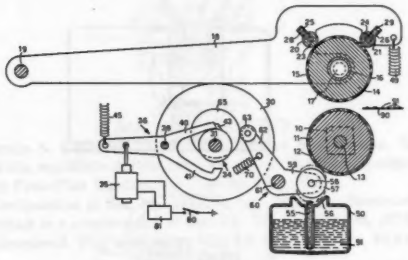
1. In a heat fixing unit of a cyclically operating copy-machine of the type having a pair of cooperating fixing rolls at

least one of which is heated to a suitable fixing temperature and through which a copy-sheet having an unfixed toner image is advanced, and actuating means controlling at least one copy cycle for each copy run, the improvement which comprises

a toner antisticky liquid supply device including:

a tank for said liquid,

a supply element selectively movable from a rest position to a first position, in which it receives a small quantity of said liquid from said tank, and to a second position in which it contacts one of said fixing rolls to apply to it the received liquid,



first moving means for reciprocating said supply element between said rest position and said first position at the end of a copy-run and for reciprocating said supply element between said rest position and said second position at the start of a copy-run,

one of said fixing rolls being movable between an operative position in which it engages the other fixing roll and an inoperative position in which it is disengaged from the other fixing roll, and

second moving means for moving said movable fixing roll from said inoperative position to said operative position at the start of a copy-run and from said operative position to said inoperative position at the end of a copy-run.

4,272,667

ELECTRIC FLUID HEATING APPARATUS EMPLOYING STACKABLE HEAT TRANSFER MODULES

Edward Golowacz, 362 N. Central Ave., Wood Dale, Ill. 60191

Filed Jul. 10, 1978, Ser. No. 922,983

Int. Cl.[3] F24H *1/16*; F28D *1/02*

U.S. Cl. 219—326 **15 Claims**

1. A heat transfer apparatus for fluid comprising:

a housing having an inner side wall surface and defining an inner space having a particular shape and containing a heat transfer fluid;

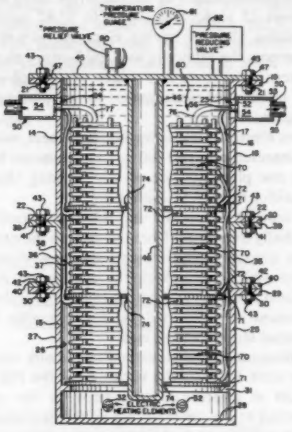
an inlet fluid conducting manifold and an outlet fluid conducting manifold disposed on said housing and each of said manifolds communicating fluid flow from the outside of said housing to said inner space;

heat transfer means disposed within said housing and in said inner space for immersion in said fluid;

said heat transfer means comprising at least one module, each module having a supporting structure including elongated members extending therefrom and at least one long length of flexible tubing would about said members to form a porous volumetric shape substantially conforming to the shape of said inner space of said housing to substantially fill the same, the ends of said tubing being connected to said manifolds to provide fluid flow conduction from said inlet to said outlet manifold;

heat exchange means coupled to said inner space for maintaining said heat transfer fluid at selected temperatures and;

wherein each heat transfer module supporting structure comprises a base plate and said elongated members comprising a plurality of upstanding posts disposed on one side of said plate, and said plate having a plurality of apertures therethrough



disposed adjacent said posts, and said tubing would about said posts in a basket-weave fashion.

4,272,668

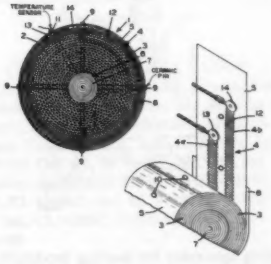
SMALL ROUND AIR STREAM HEATING UNIT

Norman A. Johnson, Lititz, and Raymond C. Kent, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 13, 1979, Ser. No. 93,198

Int. Cl.[3] H05B *3/16*

U.S. Cl. 219—375 **6 Claims**



1. A small electric resistance air stream heater which operates directly on 120 volts with a wattage output of less than 500 watts comprising

(1) an electrically insulating housing;

(2) a rolled heating assembly positioned within the housing, said heating assembly having a diameter of about 6" and comprising in combination,

(A) an electrically insulating core;

(B) an electrically conductive crimped metallic foil heating element comprising at least two electrically connected strips thereof, each having crimps in which the distance between peaks is about 0.085 inch, said crimps having a depth of about two times the pitch between successive crimps and being substantially evenly distributed along the lengths of said strips, said foil heating element having electrical volume resistivity falling in the range of from about 75×10^{-6} ohm-cm to 125×10^{-6} ohm-cm, a thickness in the range of about 0.001 to 0.005 inch (0.025 to 0.127 mm), each of said

crimped foil strips having a width in the range of about 0.25 inch to 0.75 inch (6.35 to 19.05 mm), the combined uncrimped length of the foil strips being in the range of about 55 to 65 feet (16.77 to 19.82 meters), said foil heating element having electrical power connections thereon, the crimps in said foil heating element forming alternate grooves and ridges which define a multitude of continuous passageways for air passing through the heater;

(C) an electrical insulating backing sheet, said electrically connected crimped foil heating elements being secured to one plane surface of said backing sheet in spaced parallel relation to each other;

(D) support means for said heating assembly extending radially outwardly from the core to the outer surface of the assembly, said support means comprising at least two pins of non-electrical conducting material positioned to extend through the backing for the foil heating element of the rolled heating assembly between the spaced strips thereof; and

(E) thermostatic means extending radially outwardly from the core through the backing for the foil heating element at a point located between the spaced strips thereof to the outer surface of the assembly to enable a heat build-up to be detected over a large cross-sectional area of the heating assembly.

4,272,669

HEATER

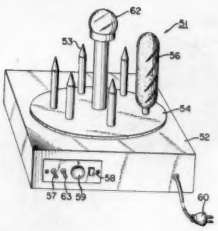
Minoru Yamanaka, Ichikawa; Yukio Yamaya, Niiza, and Masahide Ichikawa, Tokyo, all of Japan, assignors to Takeshi Yagi, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,597

Claims priority, application Japan, Mar. 19, 1979, 54-34289[U]

Int. Cl.³ A47J *37/08*

U.S. Cl. 219—385 **5 Claims**



1. A heating apparatus for heating foodstuffs, said heating apparatus comprising:

(a) a housing;

(b) a plurality of heating means mounted in a circular pattern on said housing, each of said heating means comprising a hollow means for insertion into said foodstuff and an electric heating element positioned within the hollow portion of said hollow means, wherein said heating means heats the foodstuff inserted thereon from the inside;

(c) warming lamp means mounted on said housing at the center of the circular pattern of said heating means, said warming lamp means warming the foodstuff from the outside and producing light for the attracting the attention of a purchaser; and

(d) control means mounted in said housing and connected to said heating means and said warming lamp means for controlling the operation thereof wherein in one mode said heating means and said lamp means are on and in another mode, said heating means is off and said lamp means is on.

4,272,670

FURNACE MUFFLES AND FURNACES

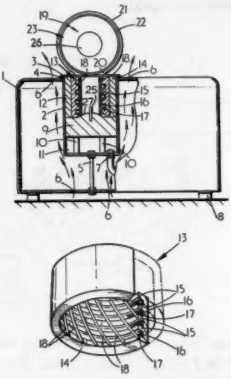
Albert G. Docx, 70 Ellesmere Rd., Altrincham, Cheshire, England

Continuation-in-part of Ser. No. 792,953, May 2, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,684

Claims priority, application United Kingdom, May 1, 1976, 17893/76; May 19, 1978, 20820/78

Int. Cl.³ H05B *3/66*

U.S. Cl. 219—390 **4 Claims**



1. A furnace muffle for firing ceramic work pieces, such as dental fixtures, comprising:

(a) a hollow cylindrical ceramic fibrous support member,

(b) an open channel defined on the inside of said support member,

(c) a coiled heating element loosely disposed in said channel, and

(d) a plurality of strips of ceramic fibrous material cemented generally diagonally across the openings of said channel for retaining said heating element therein, said strips being substantially circular in cross-section.

4,272,671

TEMPERATURE CONTROL SYSTEM FOR ELECTRIC SURFACE HEATER

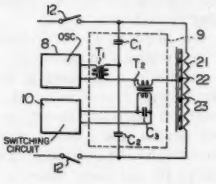
Hitoshi Hukagawa, Kodoma; Isao Shimada, Yahata; Masayuki Naruo, Hirakata, and Terumi Endo, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 17, 1979, Ser. No. 75,991

Claims priority, application Japan, Sep. 15, 1978, 53-113877

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—505 **9 Claims**



1. A temperature control system for electric surface heater formed of piled layers of a heating element and a thermosensitive electrode, said heating element being connected at both ends to a commercial alternating current source, the system comprising a direct current source circuit generating a direct current with a commercial alternating current applied thereto

from said alternating current source, an oscillating circuit generating an alternating current of a frequency higher than that of said commercial alternating current with said direct current from said direct current source circuit, a coupling circuit applying said alternating current of the higher frequency from said oscillating circuit between said heating element and said thermosensitive electrode of the heater as a signal voltage, and a switching circuit detecting any variation in the impedance between the heating element and the thermosensitive electrode and opening a contact inserted between the heating element and the commercial alternating current source at a set level of said detected impedance.

4,272,672

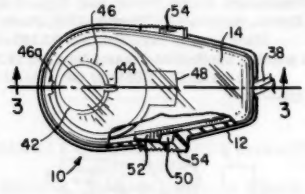
AQUARIUM HEATER

Marvin A. Goldman, Great Neck; Jerome N. Goldman, New York, and Silvio J. DiMarchi, Brooklyn, all of N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.

Continuation of Ser. No. 837,618, Sep. 28, 1977, abandoned, which is a continuation of Ser. No. 728,203, Sep. 30, 1976, abandoned. This application May 18, 1979, Ser. No. 40,416

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—523 **5 Claims**



1. An aquarium heater for mounting on the top of an aquarium wall, and having an exposed thermostatic control, comprising

(a) a glass tube body closed at one end;

(b) an electrical heater element in said body;

(c) a thermostatic control connected to said heater element and extending from the top of said tube body;

(d) an electric power line for said heater element extending from the top of said tube body; the improvement characterized by

(e) a unitary dielectric sealing cap for said body disposed on the end of said tube opposite said closed end and sealingly engaging said thermostatic control;

(f) said sealing cap extending part-way into said body;

(g) an integral sealing skirt on said sealing cap and coaxial therewith, said sealing skirt extending partly along the outside of said tube body walls from the open end thereof;

(h) an integral radial extension on said sealing cap, said radial extension surrounding and sealing said power line;

(i) a hanger mounting unit coaxial with said sealing cap;

(j) an integral depending extension on said hanger mounting unit extending from one side edge thereof, said extension having a threaded bore therein;

(k) an adjusting screw in said threaded bore for engaging the outer surface of an aquarium wall;

(l) a pair of spaced integral brackets depending from said hanger mounting unit and spaced from said adjusting screw for engaging the inner surface of said aquarium wall; and

(m) a control knob engaging said thermostatic control.

4,272,673

HEATING ELEMENT

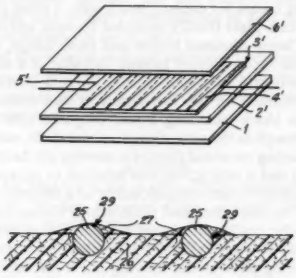
Daniel Semanaz, Vernaison, and Robert Cassat, Ternay, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 828,603, Aug. 29, 1977, abandoned, which is a continuation of Ser. No. 813,353, Jul. 6, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,637

Claims priority, application France, Jul. 6, 1976, 76 21205; Nov. 15, 1976, 76 34843

Int. Cl.³ H05B *3/36*

U.S. Cl. 219—544 **26 Claims**



1. A heating element which comprises:

a generally flat and generally solid, electrically insulating substrate, said substrate comprising a reinforced polyimide resin composite;

a continuous electric resistor wire element of a predetermined resistance wound around and at least partially inlain within said composite, said electric resistor wire element being integrally coated with a layer of a thermostable, electrically insulating coating; and

means for coupling said electric resistor wire element with an electric power source.

4,272,674

CHECK DIGIT CALCULATOR

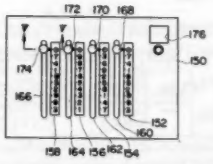
Mutsumi Takahashi, Kawasaki; Toshio Uwabe, Tokyo; Toshio Nagase, Yokohama; Shosuke Sato, and Hideshi Matsuzawa, both of Tokyo, all of Japan, assignors to Tokyo Keiki Company Ltd. and Totec Co. Ltd., both of Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,236

Claims priority, application Japan, Oct. 31, 1977, 52/130406; Oct. 31, 1977, 52/130407; Jul. 16, 1978, 53/86273

Int. Cl.³ G06C *27/00;* **G01D** *13/22*

U.S. Cl. 235—69 **3 Claims**



1. A check digit calculator for directly indicating code number check digits according to modulus 10 and/or modulus 11, comprising:

code number setting means wherein a plurality of slits are formed in the surface of the calculator case, said slits being equal in number to code number digit groups, each of said digit groups being indicated along each of said slits, said

digit group corresponding to a predetermined modulus and selected according to the weight of each digit in the code number associated therewith and a code number setting knob is disposed along each of said slits;

guide means for each of said code number setting knobs, said knob being inserted through a coiled spring into a guide cylinder mounted on the surface of the calculator, a flange being formed at the lower end of said knob, a guide plate including a plurality of holes arranged at predetermined spaces and a slit connecting said holes with each other being disposed inside the calculator case such that said flange is selectively engageable with said holes, depression of said knob causing said flange to project through said hole to permit sliding movement of said knob;

connecting means for each of said knobs, a press pin having a press cam plate fixedly mounted thereon and on the top thereof being disposed below said knob flange, said press cam plate being pressed against one side of a slit of a set plate resiliently secured to a fixed frame, a movable block being mounted on the lower part of said press pin, said movable block including a pair of guide rails extended therethrough in the same direction as said slit, said moving block having mounted therein a moving pin held between a spring and a stop screw and adapted to movement in a transverse direction corresponding to a direction crossing said slit, so that when said press cam is moved downward against the resilience of said set plate, said press pin is moved downward so that a transverse force is imparted to said moving pin and said moving pin is extended through a side wall of said movable block to engage with one of a plurality of holes formed in endless belt means at predetermined spaces and thereby to hold said knob and said endless belt means in a locked condition;

said endless belt means being extended by way of a plurality of pulleys along said slits and around a sprocket pulley formed on the outer periphery thereof with a plurality of projections adapted to engage with the holes in said endless belt means, so that when said knob is slid with said moving pin of said movable block being engaged with the hole in said endless belt means, said endless belt means is moved in response to the sliding movement of said knob; and

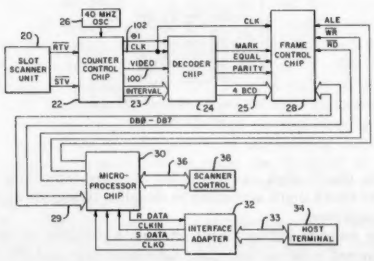
check digit indicating means mounted on the same shaft with said sprocket pulley, so that when a desired code number is set by said code number setting means, said knob guide means, said connecting means and said endless belt means are operated in association to rotate said sprocket pulley and thereby to indicate a check digit corresponding to said set code number.

4,272,675

SYMBOL PROCESSING SYSTEM

Denis M. Blanford, and Syed Naseem, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 30, 1979, Ser. No. 43,971
Int. Cl.³ G06K 7/10
U.S. Cl. 235—463 **19 Claims**



1. A system for processing a continuous string of data generated by a pattern recognition array during scanning of a bar-coded symbol, where said string of data contains valid data intermingled with invalid data, comprising:

means receiving said data from said pattern recognition array;

means coupled to said receiving means for storing said data from said pattern recognition array;

timing means for clocking said data from said receiving means to said storage means;

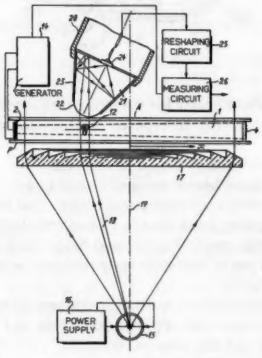
and logic means, coupled to said timing means and said storage means, for distinguishing valid data from invalid data and causing the valid data to be captured in said storage means while the invalid data is clocked out of said storage means by said timing means.

4,272,676

OPTICAL-PICKUP COORDINATOMETER

Eugene Dieulesaint; Daniel Royer, and Richard Guedj, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 9, 1979, Ser. No. 93,137
Claims priority, application France, Nov. 10, 1978, 78 31861
Int. Cl.³ G01D 21/04
U.S. Cl. 250—221 **12 Claims**



1. An optical-pickup coordinatometer comprising a writing table provided with electromechanical transducer means for propagating elastic-wave trains in a direction parallel to the table surface, a pickup which is capable of point detection of the passage of elastic waves when it rests on the table and chronometric means for determining each coordinate by measuring the time taken by the elasticwave trains to travel over the corresponding distance, wherein the writing table is constituted by a plate of refractive material placed within an optical polarizing cell, said cell being so arranged as to prevent emergence of incident radiation produced by a source, said pickup being an optical device for receiving that portion of the radiation which emerges from the optical cell by reason of the birefringence induced within the plate by the volume elastic-wave trains issuing from said electromechanical transducer means.

4,272,677
METHOD AND APPARATUS FOR THE AUTOMATIC STABILIZATION OF DRIFT IN RADIATION MEASUREMENTS

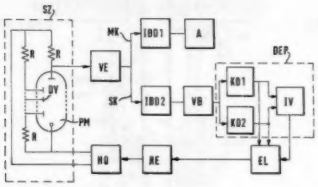
Fritz Berthold, Pforzheim, and Helmut Kubisiak, Wildbad-Nonnenmiss, both of Fed. Rep. of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold, Wildbad, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,723

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826484

Int. Cl.[3] **G01D** *18/00*

U.S. Cl. 250—252 **34 Claims**



24. Radiation measurement apparatus comprising: a detector means for absorbing radiation and for providing pulses whose pulse amplitude corresponds to the energy of the radiation absorbed by it and extends over a pulse amplitude spectrum; a determination means, connected to the output of said detector means, for deriving a control signal from a peak in the pulse amplitude spectrum, said peak being the peak resulting from individual electrons; and a control means, connected between said determination means and said detector means, for automatically stabiiising the drift of said detector.

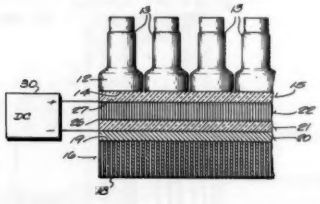
4,272,678
GAMMA RAY CAMERA USING A CHANNEL AMPLIFIER

Kai Lange, Strandvej, Denmark, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,979

Int. Cl.[3] **G01T** *1/20, 1/00*

U.S. Cl. 250—363 S **5 Claims**



1. A scintillation camera having means for amplifying the brightness of scintillations, comprising:

an array of photodetector devices for producing electric signals in response to intercepting scintillations,

a planar homogeneous unitary scintillator element spaced from said photodetector devices and responsive to absorption of gamma ray photons by producing primary scintillations where photons are absorbed,

the means for amplifying the brightness of the primary scintillations comprising a channel amplifier plate extending transversely to the path between said planar scintillator element and said photodetector array and being composed of a plurality of elements having electron emissive internal channels for receiving electrons and for multiplying electron current,

a photocathode layer disposed at corresponding ends of said channel elements at a face of said plate which is presented toward said scintillator element for emitting electrons into said channels in response to absorption of photons corresponding with primary scintillations from said scintillator,

a phosphorescent screen layer disposed at corresponding ends of said channels at a face of said plate which is presented toward said photodetector array and responsive to absorption of multiplied electrons by producing brightened scintillations corresponding with said primary scintillations, and

means for connecting opposite ends of said channels to a source of d-c voltage for propagating said electrons from the photocathode through the channels,

a plate of transparent material interposed between said planar scintillator element and said photocathode layer for coupling said primary scintillations in said scintillator to said photocathode layer, and

a plate of transparent material interposed between said phosphorescent screen means and said array of photodetectors for coupling the brightened scintillations on said screen to said photodetectors.

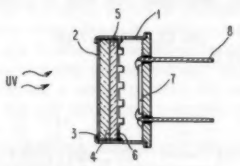
4,272,679
ULTRAVIOLET RADIATION SENSOR

Frederick K. Blades, Boulder, Colo., assignor to PureCycle Corporation, Boulder, Colo.

Filed Sep. 28, 1979, Ser. No. 80,097

Int. Cl.[3] **G01J** *1/42;* **G01N** *21/64*

U.S. Cl. 250—372 **13 Claims**



1. A UV radiation sensor for measurement of incident UV radiation comprising:

a first layer of UV absorptive material arranged to be exposed directly to said incident radiation comprising a plurality of phosphor particles which, in response to the incident UV, emit visible or near visible radiation; followed by

filter means for absorbing substantially all UV radiation not absorbed by said phosphor and transmitting said visible or near visible radiation; and

means for providing an electrical signal in response to said visible or near visible radiation;

whereby solarization of said filter means is avoided.

4,272,680
MODULAR ARRAY RADIATION DETECTOR

Dennis J. Cotic, Pewaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 3, 1979, Ser. No. 99,537

Int. Cl.[3] **G01T** *1/18*

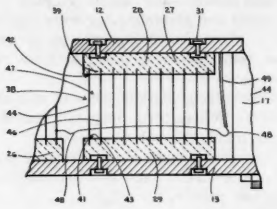
U.S. Cl. 250—375 **22 Claims**

1. An improved support structure for a radiation detector apparatus of the type having a pair of spaced insulating members with a plurality of electrodes disposed therebetween for defining gaps to be filled by a gas for producing photoelectron ion pairs when radiation enters the gaps, wherein the improvement comprises:

a pair of support members spaced in generally parallel relationship and having their ends interconnected to form a rigid structure for receiving said pair of insulating members therein; and

fastening means for rigidly and releasably attaching at a

plurality of points said pair of insulating members to said rigid structure, with each of said insulating members being



in parallel contiguity with one of said pair of support members.

4,272,681

METHOD AND APPARATUS FOR ISOTOPE-SELECTIVELY EXCITING GASEOUS OR VAPOROUS URANIUM HEXAFLUORIDE MOLECULES

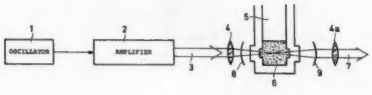
Ernst E. Fill, Garching; Heinz L. Jetter, Feldkirchen-Westerham, and Reinhard Volk, Munich, all of Fed. Rep. of Germany, assignors to Uranit Uran-Isotopentrennungs-Gesellschaft mbH, Jülich, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,939

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808955

Int. Cl.³ H01J *27/00*

U.S. Cl. 250—423 P **7 Claims**



1. A method of isotope-selectively exciting gaseous or vaporous uranium hexafluoride molecules by means of a monochromatic iodine laser beam having an adjustable frequency, in which the beam frequency is tuned to an absorption band of the molecules to be isotope-selectively excited wherein the iodine laser beam is scattered in liquid and/or solid nitrogen and the beam produced by triply stimulated Raman-scattering is brought into interaction with the uranium hexafluoride molecules.

4,272,682

SPECIMEN ELEVATOR FOR AN ION MILLING MACHINE

Peter R. Swann, Pittsburgh, Pa., assignor to Gatan, Inc., Warrendale, Pa.

Filed Aug. 10, 1979, Ser. No. 65,579

Int. Cl.³ G21N *5/06*

U.S. Cl. 250—442 **17 Claims**

1. A machine for ion milling a specimen comprising:

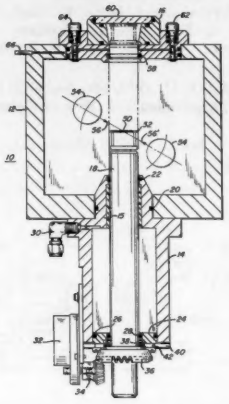
a main evacuated chamber having an upper port and a lower port;

ion milling means for ion milling of a specimen disposed in said main evacuated chamber;

a secondary chamber in communication with said main chamber through its upper port for specimen viewing and exchange;

specimen positioning means extending through said lower port of said main chamber for vertically moving the specimen between a first position in said main evacuated chamber, where ion thinning is accomplished, and a second position in said secondary chamber, where the specimen can be viewed and exchanged;

means for sealing said main chamber at its lower port; and



sealing means for providing a vacuum seal between said main chamber and said secondary chamber when said specimen positioning means is in the second position.

4,272,683

TRANSPORT AND STORAGE VESSEL FOR RADIOACTIVE MATERIALS

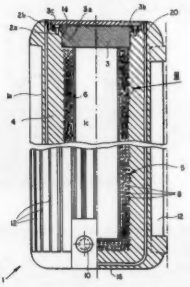
Henning Baatz, Essen; Dieter Rittscher, Heiligenhaus, and Jürgen Fischer, Essen, all of Fed. Rep. of Germany, assignors to GNS Gesellschaft für Nuklear-Service mbH and Rheinisch-Westfälisches Elektrizitätswerk, both of Essen, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,856

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740933

Int. Cl.² G21F *5/05*

U.S. Cl. 250—507 **6 Claims**



1. A transport and storage vessel for radioactive materials, comprising an upwardly open body having lateral walls and a bottom defining a chamber for receiving said materials, a cover removably affixed to said body for closing said chamber, said body being cast in one piece from high-carbon ferrous metal and having an outer layer, an intermediate layer, and an inner layer, the inner and outer layers being composed of said high-carbon cast ferrous metal, said intermediate layer consisting of said high-carbon cast ferrous metal as a matrix and having heavy-metal particles of a melting point above 800° C. embedded in said matrix whereby the intermediate layer forms a gamma radiation shield, said outer layer being formed unitarily

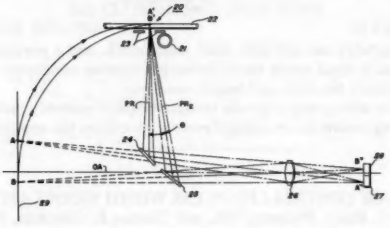
with a multiplicity of channels cast in situ and filled with a material other than said ferrous metal and resistant to penetration by neutrons whereby said outer layer forms a neutron radiation shield, said outer layer being further formed unitarily with cooling ribs over its external surfaces and cast in one piece with said outer layer from said high-carbon ferrous material.

4,272,684

OPTICAL BEAM-SPLITTING ARRANGEMENTS ON OBJECT SIDE OF A LENS

Ned J. Seachman, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1978, Ser. No. 949,179
Int. Cl.³ H01J *3/16*; H04N *1/10*
U.S. Cl. 250—578 **14 Claims**



1. An optical system for focusing light reflected from an illuminated line on an object plane onto an image plane including

an illumination means for illuminating said object line,

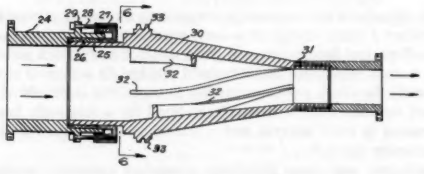
at least two mirrors positioned with respect to said illuminated object line so as to simultaneously reflect identical images of said line into the entrance pupil of a lens, said lens focusing at least a portion of said reflected object line image onto a separate portion of said image plane.

4,272,685

GENERATING MEANS

James Toyama, 1980 Cedar Ave., Long Beach, Calif. 90806

Filed Dec. 20, 1976, Ser. No. 752,874
Int. Cl.³ F01D *15/10*
U.S. Cl. 290—52 **1 Claim**



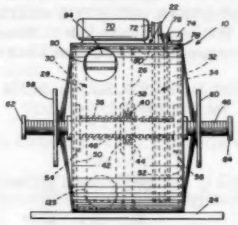
1. Apparatus for generating electricity by passing water in a pipe through a series of turbines in which the water traverses from a higher elevation to a lower elevation and in which the turbines include a water flow valve upstream of said turbine in the pipe to alter the flow rate in said pipe, said turbines comprising a housing having a conically tapering configuration truncated at the smaller extent and blades disposed on an inner surface of said housing such that said blades have a continuous, uninterrupted, spirally curved tapering configuration and terminate in the small end of said housing, said housing supported at its small end by bearings and at its large end by a packing ring which supports said housing and allows said housing to rotate, gear teeth disposed about the outer periphery of said housing at its large end, a generator having a toothed armature, and a chain connecting said gear teeth of said housing to said toothed armature so that rotation of said housing provides rotation of said armature thereby generating electricity.

4,272,686

APPARATUS FOR CONVERTING HYDRAULIC ENERGY TO ELECTRICAL ENERGY

Kunio Suzuki, 3615 Sierra Dr., Honolulu, Hi. 96816

Filed Mar. 25, 1980, Ser. No. 133,672
Int. Cl.³ F03B *13/08*
U.S. Cl. 290—54 **10 Claims**



1. An electric power plant for generating electrical energy from the energy of a fluid flowing within a pipeline, comprising:

a turbine having a plurality of vanes removably secured to the outer rim of the turbine;

a flywheel for driving an electrical generator;

a tubular shaft connecting said turbine and said flywheel for enabling said flywheel to be driven by said turbine;

a housing surrounding said turbine and said flywheel, said housing having a center partition for providing a first chamber for said turbine and a second chamber for said flywheel;

a central axle extending through said tubular shaft, said axle being supported by said housing;

means for supporting said tubular shaft passing through said partition;

inlet openings formed through said housing for connecting the power plant to a pipeline to enable said turbine to be operated in an undershoot or overshoot condition; and

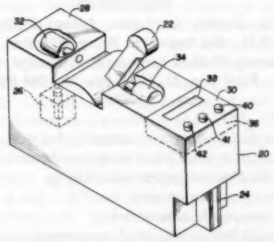
an oulet opening formed through said housing for allowing fluid to exit from the turbine chamber.

4,272,687

POWER MANAGEABLE CIRCUIT BREAKER

William N. Borkan, 3031 Prairie Ave., Miami Beach, Fla. 33140

Filed Mar. 5, 1979, Ser. No. 17,776
Int. Cl.³ H01H *3/28, 43/10, 43/24*
U.S. Cl. 307—115 **49 Claims**



1. A power management and control device comprising:

a rectangular housing having a pair of terminals accessible from the exterior of said housing for installation into a power panel as a normal circuit breaker;

a circuit breaker in said housing having a pair of contacts connected in series with said terminals which open in response to current overload;

actuator means in said housing for opening and closing said contacts; and

electrical timer means in said housing for controlling said actuator means independent of current overload to open said contacts and automatically reclose said contacts after a period of time.

4,272,688

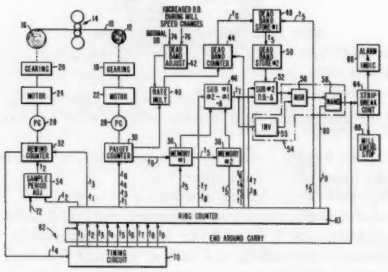
STRIP BREAK DETECTOR SYSTEM

John W. Cook, Williamsville, and Voit C. Drankhan, Boston, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1979, Ser. No. 54,516

Int. Cl.[3] B65H *25/30, 25/32*

U.S. Cl. 307—123 **7 Claims**



1. A break detection system for a process line wherein strip material is being payed out from a payoff reel to a rewind reel comprising:

means for successively digitally counting the material being payed out from the payoff reel, over first and second equal digital sampling intervals, said intervals being a function of the rotational displacement of the rewind reel;

means for memorizing the successive digital counts to provide first and second memory counts respectively;

means for subtracting the first memory counts from the second memory counts to provide a difference signal delta; and

means for providing a signal indicative that a break in the strip material has occurred when delta is equal to or greater than a preselected dead-band count.

4,272,689

FLEXIBLE WIRING SYSTEM AND COMPONENTS THEREFOR

Philip C. S. Crosby, Lexington, Mass.; Philip A. Barrios, Nashua, N.H., and Ronald R. Perry, Billerica, Mass., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Sep. 22, 1978, Ser. No. 944,997

Int. Cl.[3] H02B *1/08*

U.S. Cl. 307—147 **7 Claims**

1. A receptacle connector assembly for use in adapting an appliance to use in a flexible wiring-type branch circuit electrical power distribution system comprising:

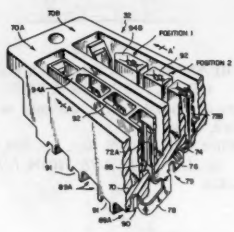
a male receptacle connector;

a female receptacle connector;

the male and female receptacle connectors each including a plurality of male and female electrical contacts, respectively, and housings for such contacts;

the housings for male contacts being of a female type and the housings for female contacts being of a male type; each such receptacle connector including physical keying means for defining a single permissble orientation for such receptacle connector to mate to plug connector;

each male contact being associated with a corresponding female contact and each such associated male-female contact pair being integrally formed from a single piece of



suitably cut and bent sheet metal stock, and a portion of such sheet metal stock forming a bussbar conductor between the male and female contacts;

each male contact/female contact/bussbar assembly including means for securing thereto a wire from the appliance.

4,272,690

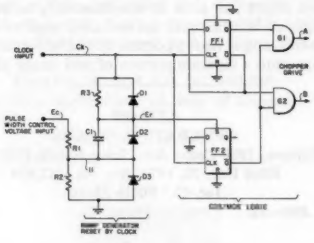
CLOCK CONTROLLED PULSE WIDTH MODULATOR

John S. Riney, Potomac, Md., and Thomas F. Chamblin, Purcellville, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 16, 1979, Ser. No. 66,984

Int. Cl.[3] H03K *3/17;* **H02M** *3/335*

U.S. Cl. 307—265 **3 Claims**



1. A pulse width modulator comprising a ramp generator to produce a ramp voltage on a ramp conductor, first and second flip-flops, and first and second gates; controlled by clock pulses on a clock conductor and a control voltage on a control conductor, the clock pulses occurring in repetitive intervals of a fixed duration with a first voltage level for a relatively long duration in each interval and a second voltage level for the remainder thereof:

wherein said ramp generator comprises capacitor means, charging means, and diode means, connected to said clock conductor, control conductor and ramp conductor, so that immediately following each transition of the clock pulses to said first voltage level the ramp voltage on the ramp conductor starts at an initial voltage which is a given function of said control voltage and changes toward another value, the ramp voltage being reset by said diode means in response to said second voltage level on the clock lead to a voltage level very near to said second level;

each flip-flop having first and second states, the first flip-flop being connected to the clock conductor to change state in response to each transition of the clock pulses to the first voltage level; the second flip-flop being connected to the ramp conductor and clock conductor, so that it is set to

the first state in response to the voltage on the ramp conductor reaching a predetermined level, and it is reset to the second level in response to the transition of the clock pulses to the first level;

the first and second flip-flops being connected to the first and second gates, to select the first gate with the first flip-flop in the first state and to select the second gate with the first flip-flop in the second state; and the selected gate has a pulse output at a given level during the interval that the second flip-flop is in the first state.

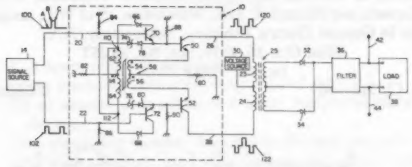
4,272,691
GENERATING ELECTRICAL PULSES

Jozef H. Hendriks, Wakefield, Mass., assignor to Teradyne, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 915,396, Jun. 14, 1978, abandoned. This application Nov. 8, 1978, Ser. No. 958,713

Int. Cl.³ H03K *5/12, 17/04, 17/08*

U.S. Cl. 307—268 **15 Claims**



1. Electrical circuitry for generating pulses having sharp dropoff characteristics, comprising

a power transistor,

a voltage source connected to supply current through the collector-emitter circuit of said transistor,

a degenerative feedback loop connected between the emitter and the base of said transistor,

switching means connected to the base of said transistor to initiate turn-on and turn-off of said transistor, and

means for activating said loop upon initiation of turnoff,

wherein said means for activating said loop includes means responsive to the current flowing through the collector-emitter circuit of said power transistor so that when said transistor is turned on and currrent through it exceeds a predetermined value, said loop is activated thereby draining away base current from said transistor.

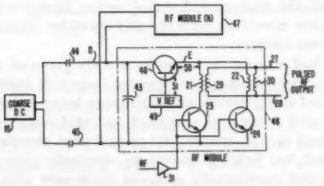
4,272,692
POWER SUPPLY DISTRIBUTION SYSTEM

Alfred W. Morse, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 23, 1979, Ser. No. 14,409

Int. Cl.³ H03K *17/62;* **H02J** *1/06, 4/00*

U.S. Cl. 307—268 **5 Claims**



1. A distributed pulsed power supply, comprising

a direct current power supply,

a plurality of modules, each having a pair of inputs electrically connecting each said module in parallel to said power supply,

a switching transistor having collector, emitter and base portions mounted within each of said modules, said collector portion being connected electrically to one of said inputs,

a pulsed load mounted in each said module electrically connected at one side to the emitter portion of its respective switching transistor and at its other side to the other of the pair of inputs, said pulsed load including means to repetitively open and close a circuit path from the power supply through the collector and emitter portion of its switching transistor,

a precision voltage source for each module connected electrically to the base portion of its respective switching transistor, said precision voltage being a value to produce a current substantially equal to the load requirements of its module divided by the current gain of the switching transistor, said switching transistor being operative in a linear regulator mode.

4,272,693
ANALYSIS CIRCUIT FOR A CHARGE COUPLED DEVICE

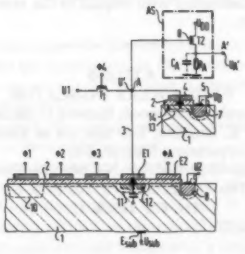
Güenther Meusburger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 896,754, Apr. 17, 1978. This application Aug. 31, 1979, Ser. No. 71,539

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2721812

Int. Cl.³ H03K *3/353;* **G11C** *19/28;* **H01L** *29/718*

U.S. Cl. 307—304 **5 Claims**



1. A charge coupled device (CCD) having a semiconductor layer of a first conductivity type, a layer of insulating material on one surface of said semiconductor layer, a row of CCD shift electrodes on aid layer of insulating material, means for feeding pulse train voltages displaced in phase relative to one another to said CCD shift electrodes in a sequential manner, a first field effect transistor, a first terminal, a further shift electrode E1 on said insulating layer connected to said first terminal and through said first field effect transistor to a pulse train voltage source U1 which intermittently supplies one of said pulse train voltages to said further shift electrode and having a first amplitude during its initial stage and a second lower amplitude at its later stage, said semiconductor layer being connected to a reference potential, a field effect capacitor 4, 5 comprising a gate electrode 4 and a diffused zone located at the surface of said semiconductor layer, said field effect capacitor including said gate electrode 4 arranged on said layer of insulating material and a part of the surface of said semiconductor layer located beneath said gate electrode and adjacent to said diffused zone, means for supplying a periodic pulse square wave pulse (U_D) to said diffused zone which occurs after said pulse train voltage U1, and said terminal A of said further shift electrode

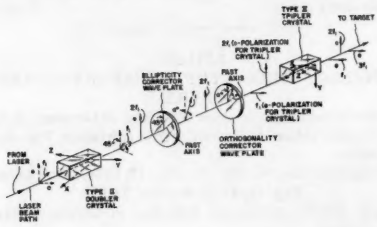
E1 connected to the gate 4 of said field effect capacitor to serve as a signal output and an additional shift electrode and a periodic square wave pulse ϕA which occurs after said periodic pulse U_D supplied to said additional shift electrode.

4,272,694

SYSTEM FOR CONVERTING THE FREQUENCY OF COHERENT RADIATION

Stephen D. Jacobs, Pittsford, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,402
Int. Cl.³ H01S *3/13*
U.S. Cl. 307—427 **15 Claims**



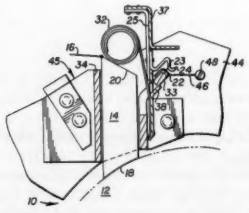
1. Apparatus for converting the frequency of coherent radiation comprising first and second crystals having non-linear optical coefficients, and first and second waveplates between said crystals each having a different effect upon the polarization of the fundamental frequency component of said radiation to orient the polarization components of said radiation in predetermined relationship with respect to the axes of the second of said crystals.

4,272,695

BRUSH WEAR INDICATOR

Frank S. Buchwald, Beachwood; Richard C. Maher, Painesville, and Jerome E. Buchina, Eastlake, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 845,764, Oct. 26, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,094
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—242 **4 Claims**



1. In a brush wear indicator having a brush box connected to a insulator, a brush slidably connected to the brush box for translatory movement relative thereto, a mounting plate releasably connected to the brush box, and a spring connected to the mounting plate urging the brush in a preselected direction in response to wearing away of an end of the brush, the improvement comprising:

a first electrical contactor connected to the support structure;

a second electrical contactor connected to the mounting plate and movable relative to the first electrical contactor between a first position at which the second electrical contactor is free from contact with the first electrical contactor and a second position at which the second electrical contactor is in engagement with the first electrical contactor; and

means connected to the mounting plate for biasing the second electrical contactor to a selected one of the first and second positions;

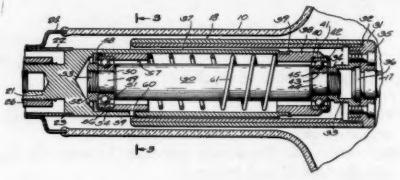
said spring being movable from a first position to a second position in response to the brush being worn away to a preselected shortened length, said second electrical contactor being maintained at the selected one of the first and second positions against the biasing influence of the biasing means by the spring at the first position of the spring and said second electrical contactor being moved to the other of the first and second positions by the biasing means when the spring reaches its second position.

4,272,696

PRELOADED BEARING ASSEMBLY FOR ROTATING ANODE X-RAY TUBES

Reimann L. Stroble, Milwaukee; Robert E. Hueschen, Hales Corners, and Richard A. Jens, Milwaukee, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,357
Int. Cl.³ H01J *35/04*
U.S. Cl. 313—60 **3 Claims**



1. A rotating anode x-ray tube comprising:

an envelope,

a stem member sealed into said envelope and having a part extending to the outside of said envelope for making an external electrical connection to it and having a tubular part extending inside of said envelope,

a shaft having first and second end portions and being arranged coaxially inside of said tubular part of said stem member, and a rotor assembly including a rotor sleeve mounted to the first end portion of said shaft which projects from said tubular part, said sleeve surrounding said tubular part and being coaxial with said shaft,

a stud projecting axially from said rotor sleeve and an x-ray target supported on said stud,

an axially yieldable non-rotating bearing retainer located inside of said tubular part of said stem member in proximity with the second end portion of said shaft,

shoulder means inside of said tubular part axially spaced from said retainer and spring means interposed in compressive condition between said shoulder means and said bearing retainer,

a first ball bearing having an externally grooved inner race and an internally grooved outer race with balls disposed around said grooves, said inner race being secured on the first end portion of said shaft and said outer race being secured in said tubular part of said stem member, and

a second ball bearing having an externally grooved inner race and an internally grooved outer race with balls disposed around said grooves, said inner race being secured on said second end portion of said shaft and said outer race being secured in said axially yieldable bearing retainer,

said spring means being operative to apply an axially directed spring means for applying an axially directed force to said axially yieldable bearing retainer and to the outer race of said second bearing secured therein to thereby maintain said balls in continuous contact with the grooves

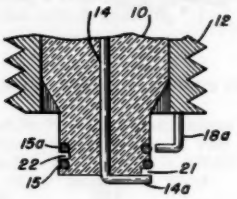
in said outer and inner races when said rotor assembly is rotating.

4,272,697

SPARK PLUG WITH ANNULAR RINGS IN INSULATING CORE CHANNELS FORMING SERIES GAP

Bernard Wax, P.O. Box 197, Succasunna, N.J. 07876

Filed Mar. 1, 1979, Ser. No. 16,183
Int. Cl.[3] H01T 13/02, 13/22
U.S. Cl. 313—123 1 Claim



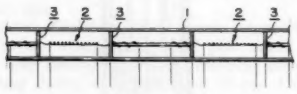
1. A spark plug comprising,
(a) an insulating core carried by a metal shell,
(b) an annular channel formed in the peripheral surface of the core,
(c) a metal ring member disposed in the said channel,
(d) a main electrode carried by the core and having a radially-offset end portion spaced from said ring member,
(e) a radial opening formed in the core and extending between the said ring member and the offset end portion of the main electrode,
(f) a second annular channel formed in the peripheral surface of the core,
(g) a second metal ring member disposed in said second channel,
(h) a second radial opening formed in the core and extending between the two annular channels, the two openings formed in the core being located substantially on opposite ends of the core diameter, and
(i) a ground electrode carried by the said shell and spaced from said second ring member.

4,272,698

TUBULAR INCANDESCENT LAMP

Hiroo Oyama, Hyogo, and Takashi Yokouchi, Takasago, both of Japan, assignors to Ushio Denki Kabushikikaisha, Japan

Filed Jul. 2, 1979, Ser. No. 54,177
Int. Cl.[3] H01J 1/88, 19/50; H01K 1/18
U.S. Cl. 313—272 14 Claims



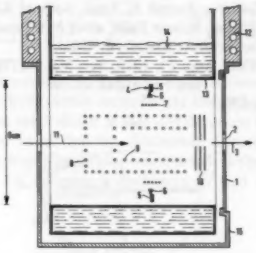
1. A long, tubular incandenscent lamp comprising:
(a) a tubular-like envelope; and
(b) a composite filament of alternating interconnected light-emitting and non-light-emitting segments wherein each non-light-emitting segment is formed of a bar with a straight middle short-circuit portion, bent portions provided at both ends of the middle short-circuit portion and support portions respectively extending from the bent portions and engageable with the inner wall of said envelope, and wherein each light-emitting segment is formed of a single coil having a light-emitting coil portion and a roughly-pitched coil-like coupling portion at the end of the light-emitting coil portion for insertion and connection with the straight short-circuit portion of the non-light-emitting segment.

4,272,699

ELECTRON IMPACT ION SOURCE WITH FIELD EMISSION CATHODE

Manfred Faubel, Rosdorf, Fed. Rep. of Germany; William M. Holber, Chicago, Ill., and Jan P. Toennies, Göttingen, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,646
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810736
Int. Cl.[3] H01J 37/073, 37/08, 49/14, 19/24
U.S. Cl. 313—360 3 Claims



1. An electron impact ion source for use in a mass spectrometer, molecular beam detector, or like instrument comprising:
an inner ionization cage defining a generally cylindrical ionization chamber;
a retarding grid disposed in radially spaced encompassing relation to the ionization cage;
an extraction grid disposed in radially spaced encompassing relation to a predetermined portion of the retarding grid;
and a field emission cathode positioned in radially spaced encompassing relation to the extraction grid,
the field emission cathode comprising a conductive support on which a multiplicity of carbon fibers are mounted, the carbon fibers projecting radially inwardly toward the extraction grid with the tips of the fibers affording a multiplicity of electron emission points directed toward the axis of the ion source.

4,272,700

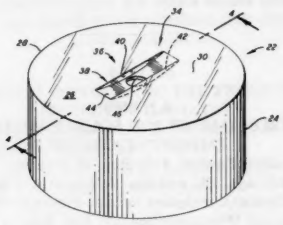
ONE PIECE ASTIGMATIC GRID FOR COLOR PICTURE TUBE ELECTRON GUN AND METHOD OF MAKING SAME

Floyd K. Collins, Seneca Falls, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,409
Int. Cl.[3] H01J 29/46
U.S. Cl. 313—458 6 Claims

1. A one-piece grid which provides an astigmatic lens for a cathode ray tube electron gun comprising: a functional grid area defined by a given perimeter and having a given thickness; and a two part lens forming aperture formed in said functional grid area; a first part of said aperture comprising a slot having

a length greater than its width and a maximum depth less than said given thickness; and a second part comprising an aperture



located at said maximum depth and extending through the remaining portion of said thickness.

4,272,701

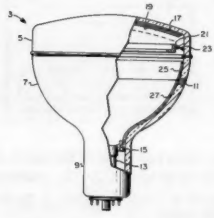
CATHODE RAY TUBE ARC LIMITING COATING

Anthony V. Gallaro; Joseph E. Lane, both of Auburn, and G. Norman Williams, Seneca Falls, all of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 27, 1979, Ser. No. 70,278

Int. Cl.³ H01J *29/88*

U.S. Cl. 313—479 **12 Claims**



1. In a cathode ray tube having an evacuated envelope including a funnel member and an arc limiting coating affixed to at least a portion of the inner surface of said funnel member wherein said arc limiting coating includes graphite particles, a silicate binder and insulator oxide particles, the improvement wherein said oxide particles have an exothermic heat of formation greater than the exothermic heat of formation of iron oxide.

4,272,702

FLUORESCENT LAMP

Toru Teshima, Hadano; Kazuo Ariga, Tokyo; Norimasa Oinuma, Machida, and Mitunari Yoshida, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1978, Ser. No. 870,853

Claims priority, application Japan, Jan. 28, 1977, 52/8949; Jan. 31, 1977, 51/10248

Int. Cl.³ H01J *61/42*

U.S. Cl. 313—493 **13 Claims**

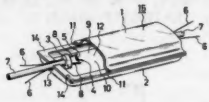
1. A fluorescent lamp comprising:

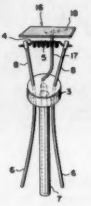
a pair of opposed shells sealingly bonded together along peripheral bonding surfaces thereof to form a lamp body symmetrically shaped about said bonding surfaces and defining an interior space within said body, each of said shells having a concave recess formed on its bonding surfaces and disposed opposite a mating concave recess formed on the bonding surfaces of the other of said shells, said mating recess having the same shape and size as said recess, said recess and said mating recess together forming an opening of a predetermined cross-sectional shape and size;

an exhaust tube extending through said opening and into said space, said exhaust tube having a cross-sectional shape and size generally equal to said predetermined cross-sectional shape and size and being sealingly secured to the perimeter of said opening;

a stem formed on said exhaust tube within said space;

an electrode filament supported on said stem within said space; and





a pair of lead wires attached to said stem and being electrically connected to said electrode filament, said pair of lead wires extending into said space through said opening between the perimeter of said opening and the outer surfaces of said exhaust tube, said pair of lead wires and said exhaust tube together sealing said opening.

4,272,703

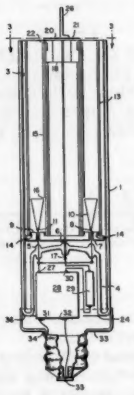
D.C. VOLTAGE FLUORESCENT LAMP

Edwin E. Eckberg, 5504 Currier Cir., Boise, Id. 83705, assignor to Edwin E. Eckberg, Boise, Id.

Filed Jun. 15, 1979, Ser. No. 48,991

Int. Cl.³ H05B *41/22*

U.S. Cl. 315—205 **24 Claims**



1. A fluorescent lamp comprising

an envelope having a phosphor coated inner surface;

a plurality of cathode leadwires supporting a platform member;

a plurality of column means mounted on said platform member;

electron emissive cathode means mounted within each col-

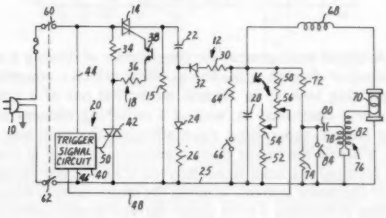
umn means, each said cathode means being connected to a cathode leadwire;
an anode member having extensions mounted adjacent the upper portions of each of said column means;
an anode leadwire connected to said anode member;
a conductive starter member mounted within each of said column means so as to provide a first insulative gap between one end of said starter member and its associated cathode means and a second insulative gap between the other end of said starter member and its associated anode extension; and
means for applying a D.C. voltage to said anode leadwire and each of said cathode leadwires.

4,272,704

DC POWER SUPPLY FOR HIGH POWER DISCHARGE DEVICES

Jerry L. Alexander, St. Paul Park, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1980, Ser. No. 125,577
Int. Cl.³ H05B *41/16, 41/18*
U.S. Cl. 315—205 **8 Claims**



1. A D.C. power supply energized from an A.C. supply and connected to a gaseous discharge lamp and a triggering circuit for such lamp for providing D.C. power for operation of such lamp including
a voltage doubler circuit having a capacitor operatively connected to the gaseous discharge lamp and the triggering circuit for the gaseous discharge lamp;
a gate controlled bidirectional solid state switch operatively connected to said voltage doubler circuit and the A.C. supply for completing a current path from the A.C. supply to said voltage doubler circuit when said solid state switch is conducting;
a voltage controlled gate circuit operatively connected to said solid state switch for controlling the conduction of said solid state switch during each half cycle of the A.C. supply;
a voltage level sensing circuit operatively connected to said capacitor; and
a bidirectional disabling switch means operatively connected to said voltage controlled gate circuit and said voltage level sensing circuit, said disabling switch means conducting during each half cycle of the A.C. supply when said voltage level sensing circuit is responding to a predetermined voltage level at said capacitor and when conducting preventing said voltage controlled gate circuit from causing said solid state switch to conduct.

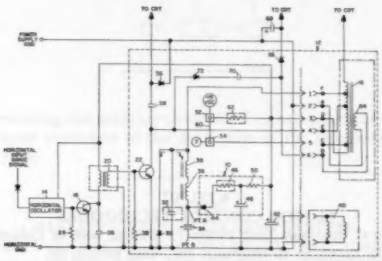
4,272,705

ANTI-RINGING CIRCUIT FOR CRT DEFLECTION YOKE

Gregory J. Beaumont, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 14, 1979, Ser. No. 75,566
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **4 Claims**

1. An anti-ringing system for eliminating spurious deflection signals caused by resonant inductances in an alternating current sweep drive circuit of a cathode ray tube in a video display, said sweep drive circuit including a plurality of coils for deflecting an electron beam and wherein electron beam scan is initiated by a flyback pulse, said anti-ringing system comprising in combination:
a source of alternating current energizing the sweep drive circuit;
a direct current power supply;
first resistor means coupling the direct current power supply to the sweep drive circuit; and



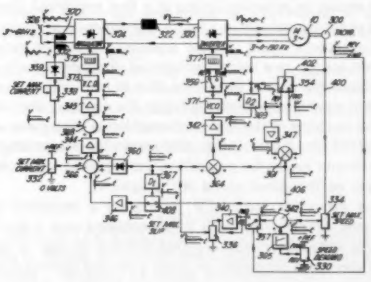
means for temporarily connecting said first resistor means to the sweep drive circuit immediately following the flyback pulse when the voltage in said circuit drops below a predetermined value thereby eliminating distortions in electron beam scan by damping out spurious deflection signals produced by resonant inductances in said sweep drive circuit.

4,272,706

MOORING WINCH SYSTEM

William M. Somerville, Newcastle, England, assignor to Northern Engineering Industries Limited, Newcastle upon Tyne, England

Continuation-in-part of Ser. No. 853,787, Nov. 21, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,434
Claims priority, application United Kingdom, Dec. 3, 1976, 50622/76
Int. Cl.³ B65H *59/38, 77/00;* **H02P** *5/34, 7/42*
U.S. Cl. 318—6 **8 Claims**



1. An automatic mooring winch system comprising a winch having a winding drum and a polyphase AC motor in driving relationship with the winding drum, an AC polyphase electric power source, converter means comprising rectifier means and inverter means, further means to connect said converter means between said motor and said power source, speed-responsive means in driving relationship with said AC motor and operble to produce a first signal corresponding to motor speed, frequency-correction means and voltage-correction means arranged to receive said first signal and to produce, respectively, frequency-correction and voltage-correction signals, said in-

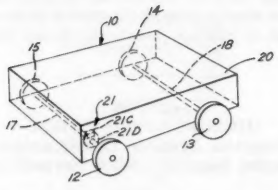
verter means and said rectifier means being arranged to receive said frequency-correction and voltage-correction signals, and electronic detector means responsive to a reduction of said frequency correction signal to a pre-set value to change the mode of operation of said inverter to change the phase of energisation of said motor whereby said motor exerts torque in the rope in-haul sense while said motor runs in the rope pay-out sense.

4,272,707

MOTOR CONTROL TECHNIQUES

Robert C. Burgener, and Philip T. Martin, both of Columbus, Ohio, assignors to Interlake, Inc., Oak Brook, Ill.

Filed Dec. 11, 1978, Ser. No. 968,557
Int. Cl.³ H02P 1/04
U.S. Cl. 318—139 **7 Claims**



1. In a vehicle including an electric drive motor means for propelling the vehicle and controller means for conducting current from a source of electrical power to the motor means, for changing the current in response to a drive signal in order to control the speed of the motor means, for enabling the motor means to generate torque in a first rotational direction which urges the vehicle in a first lineal direction in response to a first direction signal and for enabling the motor means to generate torque in a second rotational direction which urges the vehicle in a second lineal direction in response to a second direction signal, improved apparatus for enabling the vehicle to move in either of the first or second linear directions within preselected speed boundaries, said apparatus comprising:

tachometer means for generating a tachometer signal dependent on the actual speed of the vehicle;

speed generator means for generating a sustained speed signal defining the speed to be sustained over a period of time and an acceleration signal defining the rate of change of the speed necessary to attain a desired sustained speed;

boundary generator means responsive to the speed signal for generating a boundary signal representation of desired speed boundaries for the vehicle;

drive means for generating said drive signal by comparing the tachometer signal with the speed signal, whereby the motor creates an appropriate amount of torque to achieve the desired speed; and

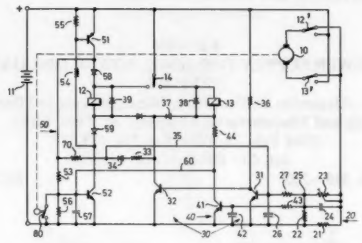
direction means for generating said first direction signal or said second direction signal whenever the actual vehicle speed lies outside the desired speed boundaries, whereby the motor means generates torque in a direction which tends to restore the actual vehicle speed within the desired speed boundaries.

4,272,708

WINDOW LIFTER INSTALLATION

Hermann Carle, Lochgau; Heribert Klement, Bietigheim-Bissingen, and Uwe Knobloch, Heilbronn-Sontheim, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,471
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820330
Int. Cl.³ H02P 1/22
U.S. Cl. 318—266 **8 Claims**



1. A circuit arrangement for the purpose of driving a movable window element or the like in motor vehicles, comprising: an operating switch, an electric motor fed out of a voltage source and controlled by way of a switching element and a motor current supervising stage affecting the switching element, wherein the motor current supervising stage at least at times recognizes a reset signal derived from a given change in time of the motor current, wherein the motor current supervising stage recognizes a reset signal derived from a given static motor value, wherein the maximum torque of the motor exceeds by 20 percent, the torque necessary to drive the movable element in the most unfavorable case of operation, wherein the drop in voltage on a measuring resistor in the motor circuit serves as a reset signal, to which measuring resistor a voltage divider with a resistor and a parallel circuit consisting of a preferably variable resistor and a capacitor is connected in parallel, whereby the reset signal may be measured on the voltage divider tapping, wherein the load inrush current of the motor is absorbed by a capacitor, wherein the motor current supervising stage affects the switching element via a bistable toggle stage which may be quenched by the reset signal and be brought back to the other switching condition only by means of a switching process of the operating switch, wherein the operating voltage may be conducted to at least one switching member of the toggle stage via the operating switch, wherein a switching member of the toggle stage is connected with the switching element and the operating switch is connected in series to the voltage source, wherein the toggle stage is provided with two transistors of which one is located in the control circuit of the switching element as switching member and is controlled by the second transistor, whereby the output signal of the first transistor is fed back to the control voltage, wherein the reset signal is conducted to the second transistor as control voltage, wherein the reset signal is conducted to the first transistor via a further switching stage, wherein the motor is switched off via the toggle stage and a further switching element is controlled to reverse the direction of rotation of the motor, whereby the control circuit of said second switching element is interrupted, when the current supervising device detects a reset signal, wherein a further transistor switching stage serves for the control of the control circuit of the second switching stage serves for the control of the control circuit of the second switching element, whereby the reset signal is conducted to said transistor switching stage, wherein the control circuit of the second switching element is affected by the transistor switching stage which also controls the toggle stage, and wherein the two switching elements comprise one change-

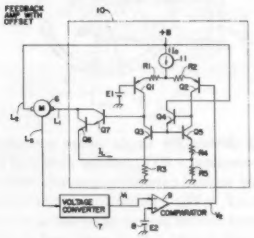
over relay each through which the motor may be depolarized or short-circuited, whereby shorting of the motor winding takes place before reversing the motor.

4,272,709

CIRCUIT FOR CONTROLLING THE DRIVE OF MOTOR

Katsuji Mizumoto; Toshihide Hanada, both of Sayama; Yasuo Kominami, Kokubunji, and Masahiro Yamamura, Kodaira, all of Japan, assignors to Pioneer Electronic Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,872
Claims priority, application Japan, Jul. 19, 1978, 53-88043
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—317 **4 Claims**



1. A circuit for controlling the running speed of a motor comprising; a comparator for comparing a speed signal produced responsive to the running speed of said motor with a reference signal, said comparator having substantially no offset; and a feedback amplifier including a differential amplifier for receiving an output signal from said comparator, an output circuit for feeding a drive current to said motor upon receipt of an output from said differential amplifier and a current feedback loop connected between said output circuit and said differential amplifier, said feedback amplifier having an offset, one end of said motor being directly connected to a first operating potential, another end of said motor being connected to a second operating potential through said output circuit and said current feedback loop, said drive current being based upon said offset of said feedback amplifier and flowing through the series path of said motor, said output circuit and said current feedback loop between said first operating potential and said second operating potential.

4,272,710

METHOD AND APPARATUS FOR THE ADJUSTMENT OF A DEFINITE POSITION OF REST OF A ROTARY TUBE

Helmut Duill, and Jakob Ansen, both of Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

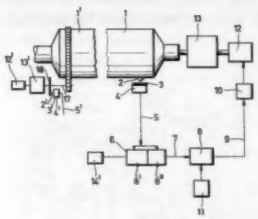
Filed May 21, 1979, Ser. No. 40,567
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823140
Int. Cl.[3] G05G 5/00
U.S. Cl. 318—470 **6 Claims**

1. A method of setting a definite standstill position of a rotary mill tube, without braking, upon switching off of the tube drive and subsequent inertial rotation of the tube, comprising the steps of:

testing the switch-off-to-standstill condition to determine the amount of angular rotation therebetween;

generating a reference time pulse prior to switch-off;

delaying the reference time pulse by a predetermined time relating to the amount of angular rotation between switch-off and standstill to produce a desired angular position of the tube; and



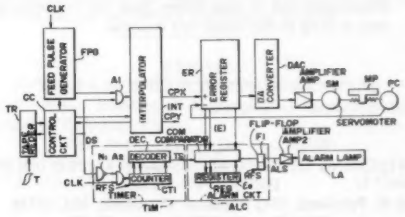
generating and applying a switch-off signal to the tube drive upon expiration of the delay time of the reference time pulse.

4,272,711

MALFUNCTION DETECTING SYSTEM

Hiroomi Fukuyama, Kanagawa, and Shinichi Isobe, Tachikawa, both of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Apr. 27, 1979, Ser. No. 34,143
Claims priority, application Japan, Apr. 28, 1978, 53/51693
Int. Cl.[3] G05B 23/02
U.S. Cl. 318—565 **4 Claims**



1. A malfunction detecting system for a numerical control unit having an interpolation means for generating command pulses in response to a distribution command and having a servo system means for generating an error signal to drive a movable part of a machine in accordance with the command pulses, comprising: means for making a comparison between the error signal generated by the servo system means and a preset value at a predetermined period of time after the distribution command is switched OFF, and means for generating an alarm signal if the means for making a comparison detects that the error signal exceeds the preset value upon expiration of the predetermined period of time.

4,272,712

PHASE LOCKED LOOP CONTROL SYSTEM

Thomas E. Beling, Saxonville, and Leopold Bric, Braintree, both of Mass., assignors to Sigma Instruments, Inc., Braintree, Mass.

Filed Apr. 10, 1979, Ser. No. 28,702
Int. Cl.[3] G05B 19/40
U.S. Cl. 318—696 **7 Claims**

1. A system for controlling a motor system having inertia in response to pulses, comprising:

a phase comparator,

a filter,

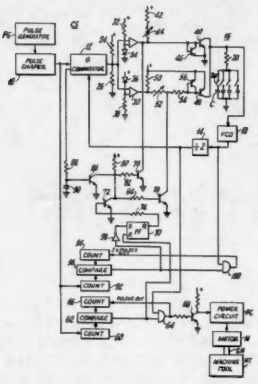
a voltage controlled oscillator,

said filter having a time factor equal to or greater than the inertial delay of the motor,

pulse comparison means for storing two sets of pulses and comparing the numbers of the pulses with each other, said

phase comparator having a feedback input and a signal input for receiving input pulses, and

circuit means for connecting said phase comparator, said filter, and said voltage controlled oscillator into a phase locked loop with a connection to the feedback input to the



comparator and for connecting the pulse comparison means to the inputs of the phase comparator so as to store and count the pulses at each of the inputs to the phase comparator and to pass pulses from the feedback input only as long as the counts are unequal.

4,272,713

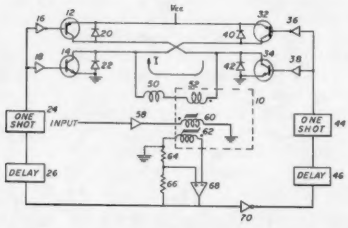
SWITCHING TRANSCONDUCTANCE AMPLIFIER FOR INDUCTIVE LOADS

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed Oct. 30, 1979, Ser. No. 89,678

Int. Cl.[3] G05B *19/40*

U.S. Cl. 318—696 **6 Claims**



1. A switching current amplifier to drive inductive loads with output devices comprising:

a. a first means for sensing an input signal from a position command signal;

b. a non-linear transformer means responsive to said input signal for sensing the load current of said inductive load, for comparing said load current to high and low switching points of said amplifier, said switching points being a function of said transformer parameters, and for providing switching signals indicative of the load current attaining said high and low switch points;

c. a second means for receiving said switching signal and for switching said output devices.

4,272,714

STARTER DEVICE FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

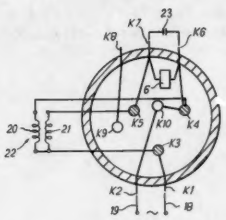
Holger V. Vind, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 14, 1979, Ser. No. 38,461

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821253

Int. Cl.[3] H02P *1/44*

U.S. Cl. 318—783 **3 Claims**



1. A starter device for single phase asynchonous motors, comprising, a housing, a PTC resistor mounted in said housing having first and second capacitor contacts connected to opposite sides thereof, a third capacitor contact mounted in said housing, first and second power input contacts mounted in said housing, first and second sets of main and auxiliary windings contacts mounted in said housing with three contacts in each said set, said first set having first and second contacts connected to opposite sides of said PTC resistor and respectively to said first and second capacitor contacts, said second set having a first contact connected to one side of said PTC resistor and a second contact connected to said third capacitor contact, said first and second sets having a third contact which is common to both said sets and is connected to one of said input contacts, said first contact of each of said sets being connected to each other and to the other of said input contacts, and all said contacts being accessible from the exterior of said housing.

4,272,715

SYSTEM FOR CONTROLLING TORQUE OF INDUCTION MOTORS

Mitsuo Matsumoto, Kokubunji, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 1,014

Claims priority, application Japan, Jan. 18, 1978, 53-3834

Int. Cl.[3] H02P *5/34, 7/42, 5/28, 7/36*

U.S. Cl. 318—800 **2 Claims**

1. A system of controlling torque of a 3 phase induction motor comprising:

means for detecting an angle of rotation θ of a shaft of said motor in terms of a digital quantity;

means for generating a sampling pulse at a definite period:

means for generating a torque instruction T_e; cumulating means responsive to said sampling pulse for sequentially accumulating a product of said torque instruction and a first constant; a first adder for adding an output of said accumulating means and said angle of rotation θ to produce a magnetic flux angle ϕ; means for adding together a first phase direction component ($\Phi_o/M \cdot \sin \phi$) of a first vector having a definite magnitude (Φ_o/M) and a direction in said magnetic flux angle ϕ, and a first phase direction component ($T_e \cdot Lr/MK_T\Phi_o \cdot \cos \phi$) of a second vector which is orthogonal to said first vector and has a magnitude equal to a product of said torque instruction and a second constant (Lr/MK_TI_o) for producing a first phase current instruction (i_{1o}); a second adder for adding together a second phase direction component ($\Phi_o/M \cdot \sin (\phi - \frac{2}{3} \cdot \pi)$) of said first vector, and a second phase direction

component $(T_r \cdot Lr/MK_T\Phi_o) \cdot \cos(\phi - \frac{\pi}{2} \cdot \pi))$ of said second vector to produce a second phase current instruction (i_{1b});

where Φ_o is the magnitude of the rotating magnetic field,

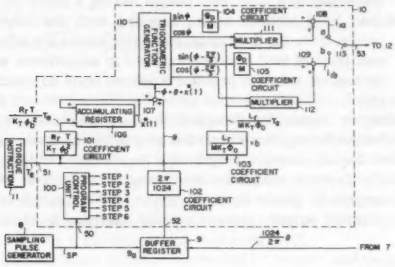
M is the mutual inductance between stator and rotor windings of the motor,

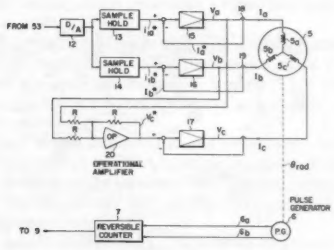
K_T is a constant, and

L_r is the self inductance of the rotor windings;

a digital-analogue converter for converting said current instructions i_{1a} and i_{1b} produced by said digital data processing means into analogue current instructions i_{1a}^* and i_{1b}^* respectively;

first power amplifier means for amplifying a difference between said analogue current instruction i_{1a}^* and a voltage I_a^* corresponding to current flowing through a first phase





stator winding of said motor to apply an output voltage V_a to said first phase stator winding, said first power amplifier means including means for feeding back its output current to its output;

a second power amplifier means for amplifying a difference between said analogue current instruction i_{1b}^* and a voltage I_b^* corresponding to a current flowing through a second phase stator winding of said motor to apply an output voltage V_b to said second phase stator winding, said second power amplifier means including means for feeding back its output current to its input; and

third power amplifier means for producing an output voltage V_c which is equal to $-(V_a+V_b)$ and applied to a third phase stator winding of said motor.

4,272,716

DEVICE FOR SIMULATING THE OPERATION OF AN ACCUMULATOR BATTERY, IN PARTICULAR A TRACTION BATTERY FOR AN ELECTRIC VEHICLE

Michel Etienne, Valmondois, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

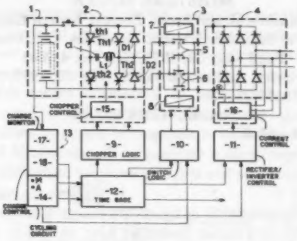
Filed Mar. 14, 1979, Ser. No. 20,444

Claims priority, application France, Mar. 29, 1978, 78 09150

Int. Cl.[3] **H02J** *7/00*

U.S. Cl. 320—14 **16 Claims**

1. A device for simulating the operation of an accumulator battery, comprising an electric supply device for connection to a source of alternating current, said supply device comprising a rectifier-inverter for connection to said source and for connection to the battery for delivering a charging current to the battery in the course of the battery charging periods and for restoring to said source a discharge current of the battery in the course of the battery discharging periods, the simulating device further comprising a direct current chopper circuit adapted to chop at a variable conduction rate selectively the



current received by the battery and the current delivered by the battery in the course of the simulation of a cycle of operation of the battery, and a switch connected between the rectifier-inverter and the chopper circuit for causing the passage of a charging current from the rectifier-inverter to the battery in the course of the battery charging periods and the passage of a discharge current from the battery to the rectifier-inverter and the source during the battery discharging periods.

4,272,717

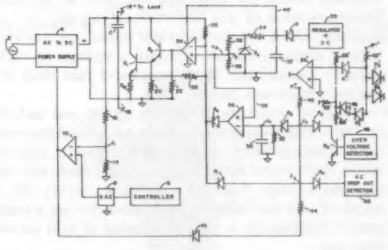
OUTPUT CAPACITOR DISCHARGE CIRCUIT

Paul W. Bailey, Flanders, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 12, 1979, Ser. No. 19,525

Int. Cl.[3] **G05F** *1/613*

U.S. Cl. 323—226 **11 Claims**



1. A power supply comprising

an output capacitor,

means for applying a regulated desired direct current voltage to said capacitor,

a transistor having a collector, an emitter, and a base,

means coupling the collector-to-emitter path of said transistor across said output capacitor with such polarity as to discharge said capacitor when current is flowing in the said path,

means for applying a bias to the base of said transistor that cuts off current flow in the path between its collector and emitter,

means for selecting the value of regulated voltage that is to exist across said capacitor,

means for comparing the difference between the value of voltage selected and the voltage across said capacitor,

means for removing said cut-off bias from the base of said transistor when said difference in voltage attains a prede-

termined value so as to initiate discharge of said capacitor, and

means for applying a forward bias to the base of said transistor that increases as the voltage across said capacitor decreases, thereby causing said transistor to have a negative resistance characteristic.

4,272,718

MOISTURE METER

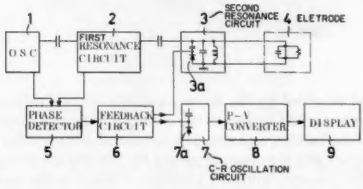
Yoshinobu Kashiuchi, and Isamu Zinguzi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 30, 1979, Ser. No. 43,645

Claims priority, application Japan, Nov. 30, 1977, 52-143557; Feb. 28, 1978, 53-23073

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **4 Claims**



1. A moisture meter for measuring the moisture content of a sample and comprising:

an oscillator;

a first resonant circuit;

a second resonant circuit having a first variable capacitance diode;

said first and second resonant circuits capacitively coupled to said oscillator and in resonance;

an electrode connected in parallel with said second resonant circuit for receiving said sample to be measured;

a phase detector connected to said oscillator and said first resonant circuit for detecting the drift in the resonant frequency point of said first resonant circuit;

a feedback circuit connected to said phase detector and said second resonant circuit to apply a voltage to said first variable capacitance diode to cancel said drift in said resonant frequency point;

an oscillation circuit for producing pulses and including a second variable capacitance diode having substantially the same characteristics as said first variable capacitance diode, said second variable capacitance diode also receiving said voltage from said feedback circuit, the pulse width of said oscillation circuit pulses having a predetermined relationship to the capacitance of said second diode; and

a pulse width to voltage converter connected to said oscillation circuit for converting the width of the pulses from said oscillation circuit to an output voltage of the moisture meter; said output voltage having a predetermined relationship to the moisture content of said measured sample.

4,272,719

ELECTRIC FIELD INTENSITY MEASURING APPARATUS

Shoji Niki, Saitama, and Yuji Yoshino, Gyoda, both of Japan, assignors to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,568

Claims priority, application Japan, Feb. 27, 1978, 53/20916

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—72 **25 Claims**

1. An electric field intensity measuring apparatus for measuring, in accordance with a reference level, the electric field intensity of an input signal received by an antenna, said input signal having an input signal level, said apparatus comprising:

first level adjuster means supplied with said input signal from said antenna for adjusting the input signal level in accordance with a first set value provided thereto to produce a first level adjusted output;

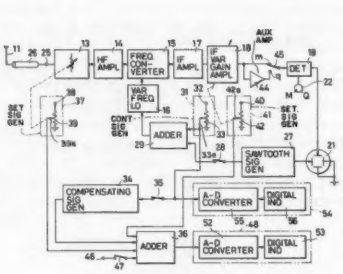
variable frequency local oscillator means for generating an oscillator output signal having an oscillation frequency which is controlled by a control signal provided as an input to said variable frequency local oscillator means;

frequency converter means for receiving said first level adjusted output and said oscillator output signal, and for frequency mixing the first level adjusted output and the oscillator output signal to provide a signal of a constant frequency as a converted output having a level;

second level adjuster means supplied with the converted output from the frequency converter means for adjusting said level of said converted output in accordance with a second set value to produce a second level adjusted output;

detector means for detecting said second level adjusted output to produce a detected output having a magnitude;

first display means supplied with the detected output from the detector means for displaying an indication of said magnitude of said detected output, said magnitude of said detected output approaching said reference level;



control signal generator means for supplying to said variable frequency local oscillator means said control signal for controlling said oscillation frequency of said oscillator output signal in accordance with a control signal set value provided to said control signal generator means;

first set signal generator means for generating a first set signal indicating said first set value provided to said first level adjuster means;

second set signal generator means for generating a second set signal indicating said second set value provided to said second level adjuster means;

compensating signal generator means supplied with a signal corresponding to said control signal set value to produce a compensating signal for compensating the frequency characteristic of the antenna;

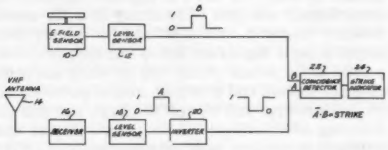
adder means for receiving and adding together the first set signal, the second set signal and the compensating signal to produce an added output having a magnitude; and

second display means supplied with the added output from the adder means for displaying an indication of said magnitude of said added output, whereby to display said measured electric field intensity of said input signal when said magnitude of said detected output reaches said reference level.

4,272,720
LIGHTNING DISCHARGE IDENTIFICATION SYSTEM

Carl L. Lennon, Merritt Island, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,945
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—72 **4 Claims**



1. A system for differentiating between cloud-to-cloud and cloud-to-ground lightning discharges comprising:

(a) an electric field sensing means generating an electric field signal responsive to a lightning discharge;

(b) a level sensor means connected to said electric field sensing means generating an output signal of a predetermined duration responsive to said electric field signal exceeding a predetermined threshold level;

(c) a coincidence detector connected to receive said output signal from said level sensor means;

(d) a VHF sensing means generating a signal responsive to a cloud-to-cloud lightning discharge;

(e) means connected between said VHF sensing means and said coincidence detector for supplying a signal to said coincidence detector responsive to said VHF sensing means generating a signal responsive to a cloud-to-cloud lightning discharge;

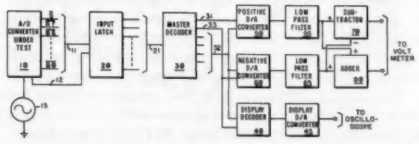
(f) indicator means connected to said coincidence detector indicating a cloud-to-cloud lightning discharge when said coincidence detector simultaneously receives signals produced by said electric field sensing means and said VHF sensing means, and

(g) said indicator means indicating a cloud-to-ground lightning discharge when said coincidence detector only receives a signal produced by said electric field sensing means.

4,272,721
ANALOG-TO-DIGITAL CONVERTER ALIGNMENT CIRCUIT

Robert H. Beeman, Berkeley, Ill., assignor to GTE Automatic Electric Laboratories Inc., Northlake, Ill.

Filed Dec. 7, 1978, Ser. No. 967,340
Int. Cl.³ H03K *13/32*
U.S. Cl. 324—73 R **8 Claims**



1. A monitor circuit for use in a system for test and alignment of an analog-to-digital converter, said system including a voltage measuring device, a source of analog signals, an analog-to-digital converter under test connected to said analog signal source, operated in response to said analog singals to generate a strobe signal and digital data representative of said analog signals, said monitor circuit comprising:

storage means connected to said converter operated in response to said strobe signal to store said digital data;

decoding means connected to said storage means operated in response to said stored data signals to generate sign and magnitude signals;

first signal conversion means connected to said decoding means operated in response to said magnitude signals and a first sign signal to generate a first filtered signal below a frequency of a predetermined value;

second signal conversion means connected to said decoding means operated in response to said magnitude signals and a second sign signal to generate a second filtered signal below said predetermined frequency;

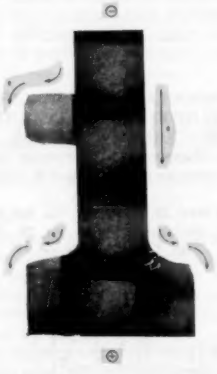
subtraction means connected to said voltage measuring device, and to said first and to said second signal conversion means operated in response to said first and to said second filtered signals to generate a signal representative of the difference between said first and said second filtered signal;

said stored data signals are coded in inverted sign plus magnitude code and said decoding means converts said inverted sign plus magnitude stored data signals to sign plus magnitude signals for values of stored data signals below a predetermined threshold and operated to convert stored data signals above said predetermined threshold to a sign signal plus a predetermined magnitude signal.

4,272,722
DETERMINATION OF ELECTRIC CURRENT FLOW PATTERNS

Armando S. Cammarano, Hyde Park; Giulio DiGiacomo, Poughkeepsie, and Stephen S. Drofitz, Jr., Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1979, Ser. No. 26,491
Int. Cl.³ G01R *19/00*
U.S. Cl. 324—76 R **7 Claims**



1. A method of producing a visually observable mapping of the flow of electric current through a metal conductor comprising the steps of:

heating said conductor to a temperature equal to or greater than approximately 96 percent of its melting temperature;

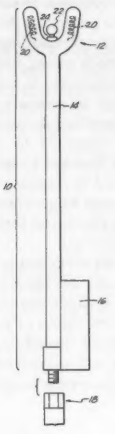
applying an electric current to said conductor; and

maintaining the heat and the electric current for a sufficient amount of time to develop a pattern of ridges and valleys parallel to the direction of current flow in the conductor.

4,272,723
POWER FACTOR METER

Virgil L. Pullen, 395 Monte Via, Oak View, Calif. 93022

Filed Jan. 15, 1979, Ser. No. 3,241
Int. Cl.[3] G01R 25/00
U.S. Cl. 324—86 8 Claims



1. Apparatus for determining power factor in an alternating current carrying conductor which isolates the operator of the apparatus from the circuit comprising

reference signal means for supplying pulses,

counting means for counting the pulses supplied by said reference signal means,

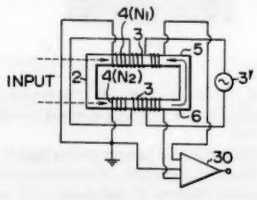
voltage sensing means for initializing said counting means in response to a zero crossing of the voltage in the conductor, said voltage sensing means being capacitively coupled to earth ground to electrically isolate an operator from the conductor,

current sensing means for stopping said counting means in response to a zero crossing of the current in the conductor.

4,272,724
MAGNETIC MODULATOR FOR MAGNETIC FIELD DETECTION DIFFERENTIALLY OUTPUTTING MAGNETIC CORE NOISE

Tatsuhiko Wada, Shapporo, and Zenuemon Abe, Yokohama, both of Japan, assignors to President of Hokkaido University, Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,380
Claims priority, application Japan, Jan. 28, 1978, 53-8628
Int. Cl.[3] G01R 33/04
U.S. Cl. 324—253 13 Claims



1. A low noise magnetic modulator, comprising:

a one-piece magnetic core defining a continuous magnetic circuit loop and having a pair of magnetic core legs which partially define the continuous magnetic circuit loop;

excitation means for generating an excitation magnetic field flowing through the continuous magnetic circuit loop defined by said core and through each of said core legs in opposite directions relative to each other; and

a pair of detecting coils wound on said core, said pair of detecting coils being differentially connected and disposed on said core so that the excitation magnetic field flowing through the continuous magnetic circuit loop defined by said core flows in opposite respective directions through said pair of detecting coils for cancelling detected magnetic core noise and for adding detected magnetic input signals applied to said core in a direction parallel to the portion of said core on which said detecting coils are wound, said detecting coils respectively having N_1 coil windings and N_2 coil windings, and said pair of detecting coils having a balance parameter γ at least approximately equal to zero, wherein $\gamma=|(N_2-N_1)/N_1|$, for maximizing core noise cancellation.

5. A low noise winding-input type magnetic modulator, comprising:

an annular one-piece magnetic core comprised of a ring-shaped first leg having a pair of opposite ends facing each other and spaced by a narrow gap, a ring-shaped second leg having a pair of opposite ends facing each other and spaced by a narrow gap, wherein said first leg is positioned aligned with and concentric to said second leg with the respective gaps in said first and second legs aligned, and magnetic material bridging between adjacent ends of said first and second legs to define a continuous magnetic circuit loop through said annular one-piece magnetic core;

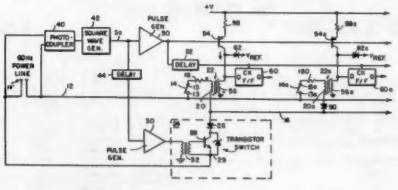
excitation means for generating an excitation magnetic field flowing through the continuous magnetic circuit loop and through each of said core legs in opposite directions relative to each other; and

detecting coils wound on said core interconnected and oriented in directions so that respective currents induced in said detecting coils by magnetic core noise and by the excitation magnetic field are cancelled and detected magnetic input signals applied parallel and in the same direction to said first and second legs are added to permit the detection of extremely weak input magnetic fields.

4,272,725
INTERFACE CIRCUIT FOR USE WITH ELECTRONIC CONTROL DEVICES

Nathan K. Weiner, Stoughton, and David D. Ketchum, Ipswich, both of Mass., assignors to Electronics Corporation of America, Cambridge, Mass.

Filed May 3, 1979, Ser. No. 35,534
Int. Cl.[3] G01R 31/02
U.S. Cl. 324—415 R 34 Claims



29. A circuit for providing an output signal representative of the state of a pair of switch contacts while providing electrical isolation between the switch contacts and the output signal, comprising:

two terminals for application of an AC power line signal;

a saturable core having a BH curve characterized by a two state hysteresis loop;

a primary winding on said core;

a secondary winding on said core;

a switching device responsive to a pulse control signal applied thereto for switching between a conductive and a nonconductive state;

the switch means, the primary winding, and the switch contacts all being connected in a series loop between said terminals to apply a saturating current to set said core to one state if said switch contacts are closed;

means responsive to an AC power line signal applied to the terminals for providing a reference signal representative of the phase of the AC power line signal;

current source means, in series with the secondary winding on said core and responsive to a test pulse signal, for providing a current pulse through the secondary winding to set said core to the other state;

pulse means responsive to the reference signal for providing the pulse control signal and the test pulse signal during selected intervals of the power line signal;

means connected to the secondary winding and responsive to the voltage across the secondary winding generated in response to said core changing its state of magnetization and a clock signal for providing an output signal representative of the state of the switch contacts in response to the voltage across the secondary winding at a time denoted by the clock signal; and

means responsive to the reference signal for providing the clock signal a predetermined time after the beginning of the test pulse from the current source.

4,272,726

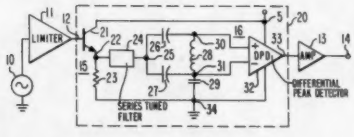
DIFFERENTIAL FM DETECTOR WITH SERIES TUNED FILTER

Max E. Malchow, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,469

Int. Cl.³ H03D *3/14*

U.S. Cl. 329—103 **15 Claims**



1. In combination with a differential peak detector apparatus with first and second input connections, means for applying FM signals having a center frequency to those input connections, which means comprises:

first reactance means having a first end connection to the first input connection of said differential peak detector apparatus, having a second end connection to the second input connection of said differential peak detector apparatus, and having a center-tap connection;

second reactance means having a first end connection to the first input connection of said differential peak detector apparatus and having a second end connection to the second input connection of said differential peak detector apparatus, for antiresonating said first reactance means at a frequency substantially equal to said center frequency;

third reactance means;

a source of FM signal voltage having substantially no source impedance at said FM signal frequencies compared to the impedances of said first and second and third reactances; and

means serially connecting said source of FM signal voltage and said third reactance means between the first end connection and center tap connection of said first reactance means including a series-tuned reactive circuit arranged to pass frequencies within a prescribed range of said center frequency.

4,272,727

SELF-CONVERGING DEFLECTION UNITS FOR COLOR DISPLAY TUBES OF DIFFERENT SCREEN FORMATS

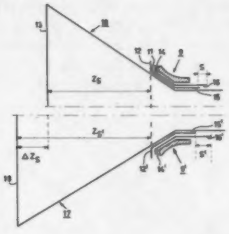
Joris A. M. Nieuwendijk; Nicolaas G. Vink, and Werner A. L. Heijnemans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1979, Ser. No. 68,371

Claims priority, application Netherlands, Aug. 25, 1978, 7808775

Int. Cl.³ H01F *5/00*

U.S. Cl. 335—213 **6 Claims**



1. A series of at least two electromagnetic deflection units for colour display tubes of the in-line type having the same deflection angles and neck diameters but at least two different screen formats, in which each deflection unit has:

a first deflection coil having a front end and a rear end for deflecting electron beams generated in the display tube in a vertical direction, the electron beams, when the unit has been mounted on a display tube, passing through the coil in the direction from the rear and to the front end,

a second deflection coil, which coil is of the saddle type and also has a front end and a rear end, for deflecting electron beams generated in the display tube in a horizontal direction, as well as a yoke ring of ferromagnetic material surrounding at least the second deflection coil, wherein for a given screen format the first and the second coil each have a given effective length between their front and rear ends, the effective length of the first coil being larger and/or the effective length of the second coil being smaller for a larger screen format, and conversely, so as to provide for different screen formats a self-converging combination of display tube/deflection unit.

4,272,728

DIFFERENTIAL-INPUT AMPLIFIER CIRCUIT

Harold A. Wittlinger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,510

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—253 **16 Claims**

1. A differential-input amplifier comprising:

first and second transistors of a first conductivity type and third and fourth transistors of a second conductivity type complementary to said first conductivity type, each of said transistors having the ends of its principal conduction path defined by respective first and second electrodes thereof and having a respective third electrode, the conduction of its principal conduction path being controlled by potential between its first and third electrodes;

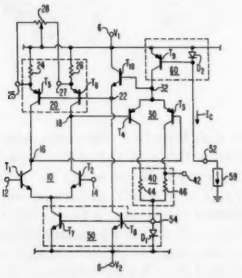
first and second input signal terminals for receiving input signal therebetween, said first input signal terminal being connected to the third electrode of said first transistor and said second input signal terminal being connected to the third electrode of said second transistor;

first controlled current source means for responding to a control signal to supply current to a first node, said first node having the second electrode of said first transistor connected thereto and being direct coupled to the third

electrode of said third transistor, the current said first controlled current source supplies to said first node being of the polarity the second electrode of said first transistor normally conducts;

second controlled current source means for responding to said control signal to supply current to a second node, said seccond node having the second electrode of said second transistor connected thereto and being direct coupled to the third electrode of said fourth transistor, the current said second controlled current source supplies to said second node being of the polarity the second electrode of said second transistor normally conducts;

common-mode feedback means connected to respond to the common-mode component of the voltages at said first and second nodes to develop said control signal, completing degenerative voltage feedback loops that adjust the respective currents supplied to said first and second nodes



by said first and second controlled current sources to substantially equal the currents flowing between said first and second nodes and the respective second electrodes of said first and second transistors;

conductive means for connecting the second electrodes of said third and fourth transistors to a first operating supply voltage, including

means for responding to the variations in the current flowing through the second electrode of at least one of said third and fourth transistors to provide an output signal;

feed-forward means independent of said common-mode feedback means, supplying a first tail current to an interconnection of the first electrodes of said first and second transistors for completing their connection as a first long-tailed pair, and supplying a second tail current proportional to said first tail current to an interconnection of the first electrodes of said third and fourth transistors for completing their connection as a second long-tailed pair.

4,272,729

AUTOMATIC PRETUNING OF A VOLTAGE CONTROLLED OSCILLATOR IN A FREQUENCY SYNTHESIZER USING SUCCESSIVE APPROXIMATION

William J. Riley, Jr., Pittsford, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed May 10, 1979, Ser. No. 37,886

Int. Cl.[3] H03L *7/12*

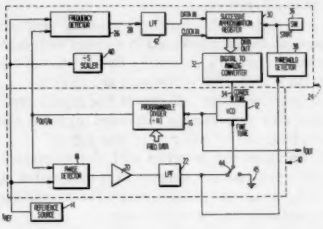
U.S. Cl. 331—1 A **17 Claims**

9. Apparatus for pretuning a voltage controlled oscillator, comprising:

a source of a reference signal;

means for detecting the difference in frequency between the reference signal and an output signal from the voltage controlled oscillator;

means for generating a digital number and for adjusting said digital number by successively decreasing powers of 2 starting from the power of the most significant bit position in response to the difference in frequency between the reference signal and the oscillator output signal; and



means for applying the adjusted digital number as a control input signal to the voltage controlled oscillator.

4,272,730

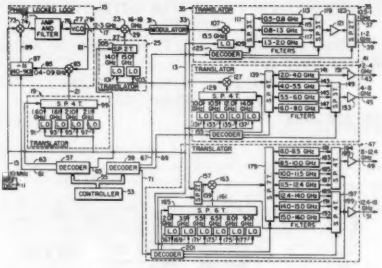
MICROWAVE FREQUENCY SYNTHESIZER UTILIZING A COMBINATION OF A PHASE LOCKED LOOP AND FREQUENCY TRANSLATION TECHNIQUES

Joseph J. Digiovanni, Los Altos, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 30, 1979, Ser. No. 34,367

Int. Cl.[3] H03L *7/18*

U.S. Cl. 331—16 **13 Claims**



3. A microwave signal generator, comprising:

a reference oscillator generating a fixed frequency reference signal in excess of 500 KHz,

a voltage controlled oscillator having an output frequency proportional to a magnitude of an input signal,

a first mixer connected to compare the frequencies of said reference signal and an output signal of a frequency divider circuit, an output signal of said mixer having a magnitude proportional to the relative phase of the signals being compared by said mixer, said output being applied to the input of said voltage controlled oscillator,

a frequency source having an output signal that is controllably switchable among frequencies that differ by a fraction of the fixed reference signal of said reference oscillator, and

a second mixer receiving the output signals of said voltage controlled oscillator and said switchable frequency source for applying a difference or sum of their frequencies to an input of said dividing circuit, whereby a signal generator is provided that is simple, and simultaneously has a fast response time and high frequency resolution.

5. A microwave signal generator, comprising:

means including a phase locked loop for selectively generating an output signal in equal fixed increments in response to a first control signal,

a plurality of local fixed frequency oscillators that each generate a unique frequency output signal,

means responsive to a second control signal for selecting the

signal output from one of said plurality of oscillators at a time, and

a mixer connected to simultaneously receive the output signal of said generating means and the output signal of one of the plurality of oscillators as selected by said switching means, said mixer characterized by forming at an output a signal having a frequency related to the relative frequencies of the two signals received by it, the fixed frequencies of said local oscillators being such that the mixer output frequency range is greater than the bandwidth of said phase locked loop,

whereby translation and expansion of the generating means given output frequency range is controllably accomplished by a cooperative selection of said first and second control signals.

4,272,731

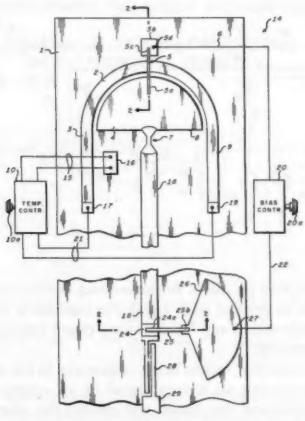
THIN FILM RESISTOR MICROWAVE NOISE GENERATOR

W. Baldwin Day, Dunedin, and Harry F. Strenglein, Clearwater, both of Fla., assignors to Sperry Corporation, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,489

Int. Cl.³ H03B *29/00*

U.S. Cl. 331—78 **14 Claims**



1. In transmission line apparatus for generating broad band noise signals:

substrate means having at least a first surface,

transmission line means affixed to said first surface and having at least a first end,

capacitive plate means affixed to said first surface opposite said first end,

thin film microresistor noise generator means coupled to said capacitive plate means and in matched energy exchanging relation with said first end,

said thin film noise generator means being affixed to said first surface, and

generator means coupled across said thin film microresistor noise generator means for cyclically heating same.

4,272,732

FIELD EMISSION LASER WITH RADIAL CURRENT PATHS

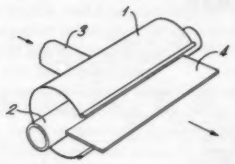
Marcus H. R. Hutchinson, London, and Daniel J. Bradley, Harrow, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 17, 1979, Ser. No. 30,936

Claims priority, application United Kingdom, Apr. 27, 1978, 16769/78

Int. Cl.³ H01S *3/05*

U.S. Cl. 331—94.5 P **2 Claims**



1. In a laser comprising a field emission diode of annular configuration defined between an outer cathode and an inner anode coaxial therewith, which anode is in the form of a hollow container for a high pressure gaseous lasing medium, the walls of the container being at least partly pervious to electrons emitted from the cathode, mirrors at opposite ends of the container to enable resonance to occur therein at the lasing frequency, and means for abstracting energy at the lasing frequency from the container, the improvement in which the said cathode is in the shape of an incomplete cylinder subtending an angle of less than 360 degrees at its axis and in which there is an external electrical connection to the said anode extending radially outwardly from the anode and through the gap formed by the said incomplete cylinder.

4,272,733

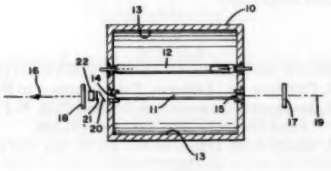
BROADLY TUNABLE CHROMIUM-DOPED BERYLLIUM ALUMINATE LASERS AND OPERATION THEREOF

John C. Walling, Morristown; Robert C. Morris, Ledgewood; Otis G. Peterson, Dover, all of N.J., and Hans P. Jenssen, Belmont, Mass., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 953,067, Oct. 20, 1978. This application May 29, 1979, Ser. No. 43,513

Int. Cl.³ H01S *3/14*

U.S. Cl. 331—94.5 F **21 Claims**



1. A broadly wavelength-tunable laser comprising:

(a) a laser medium comprising a single crystal of beryllium aluminate of the chrysoberyl structure having a trivalent chromium doping concentration from about 0.002 to 10 atom percent with respect to aluminum sites;

(b) means for exciting said laser medium to emit coherent radiation;

(c) tuning means for tuning said coherent radiation in a spectral range from red to infrared; and

(d) mirrors forming an optical resonator, said resonator

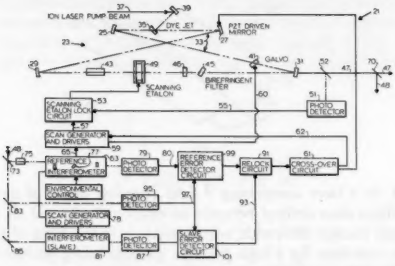
enclosing the laser medium and tuning means and adapted for maintaining laser oscillations between the mirrors.

4,272,734

DUAL REFERENCE INTERFEROMETER FOR DYE LASER STABILIZATION

Steven M. Jarrett, Los Altos, and Harold D. Du Bose, Sunnyvale, both of Calif., assignors to Spectra-Physics, Inc., Mountain View, Calif.

Filed May 29, 1979, Ser. No. 43,466
Int. Cl.[3] H01S *3/13*
U.S. Cl. 331—94.5 S **11 Claims**



1. A dual reference interferometer control apparatus for detecting and controlling the frequency of operation of a laser, said control apparatus comprising,

a continuous wave dye laser, having a resonant laser cavity, capable of lasing in a plurality of modes,

tuning means for restricting lasing to a single mode at a selected frequency,

first reference interferometer means having a relatively small free spectral range for stabilizing the frequency of operation of the dye laser at a relatively narrow line width,

servo means operatively associated with the first reference interferometer means and the tuning means for servo locking the tuning means to a side of a transmission fringe of the first reference interferometer to maintain lasing operation at the selected frequency in the absence of perturbations that can cause a mode hop in the dye laser cavity, and

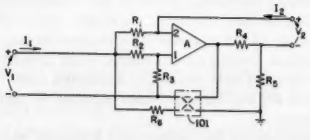
second reference interferometer means having a free spectral range substantially larger than the first reference interferometer and operatively associated with the first reference interferometer means and the servo means for detecting a mode hop in the dye laser cavity and the extent and direction of the mode hop and effective, in the event of a mode hop, to return dye laser to operation at the selected frequency.

4,272,735

SINGLE AMPLIFIER VARIABLE GYRATOR

Richard J. Cubbison, Jr., Littleton, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1980, Ser. No. 131,898
Int. Cl.[3] H03B *5/08*; H03H *11/42, 11/50*; 331 *108 B;108 D;110;115;167*
U.S. Cl. 331—108 B **15 Claims**



1. A gyrator with variable impedance characteristics having a first terminal of the first port, a second terminal of the first port and a pair of terminals for the second port comprising:

voltage source means (A) having a first input (1), a second input (2), an output;

first impedance means (R_1) connected from said second voltage source means input (2) to said first terminal of the first port;

second impedance means (R_2) connected from said first voltage source means input (1) to said first input terminal;

third impedance means (R_3) connected from said first voltage source means input (1) to said second terminal of the first port;

fourth impedance means (R_4) connected from said voltage source means output to a first of said pair of terminals for the second port;

fifth impedance means (R_5) connected from said first terminal of the second port to circuit ground;

wherein said second voltage source means input (2) is also directly connected to the second of said terminals of the second port; and

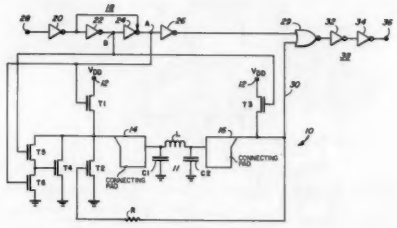
wherein the first of said first port terminals is connected by a sixth impedance means (R_6) to circuit ground or said voltage source means output while the second of said first port terminals is connected to said voltage source means output or to circuit ground respectively.

4,272,736

START STOP OSCILLATOR HAVING FIXED STARTING PHASE

Anil Gercekci, Geneva, and Heinz B. Maeder, Nyon, both of Switzerland, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1979, Ser. No. 47,546
Int. Cl.[3] H03B *5/12*
U.S. Cl. 331—108 B **9 Claims**



1. A start-stop oscillator for generating oscillation signals in response to an applied start signal, the oscillation signals having a predetermined and fixed starting phase associated therewith, comprising:

inverter amplifier means being responsive to the start signal for producing an output signal at an output having a predetermined amplitude and phase, the phase of said output signal being shifted a predetermined amount with respect to the phase of an input signal which is applied to the input of said inverter amplifier;

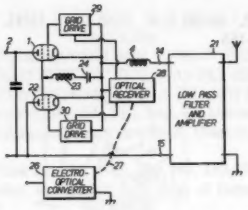
phase shifting means for shifting the phase of said output signal from said inverter amplifier by a predetermined amount, said phase shifting means being connected between said output and input of said inverter amplifier means and including inductive circuit means, and

bias circuit means coupled both to said inverter amplifier means and said inductive circuit means and being responsive to a stop signal applied to the oscillator for inhibiting the oscillation signals and for producing a direct current that is injected through said inductive circuit means thereby establishing the beginning phase of the oscillation signals at the initiation thereof.

4,272,737
PULSE WIDTH MODULATOR FOR AMPLITUDE MODULATION CIRCUIT

Robert B. Molyneux-Berry, Danbury, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed May 25, 1979, Ser. No. 42,289
Int. Cl.[3] H03C 1/00; H03K 7/08
U.S. Cl. 332—1 8 Claims

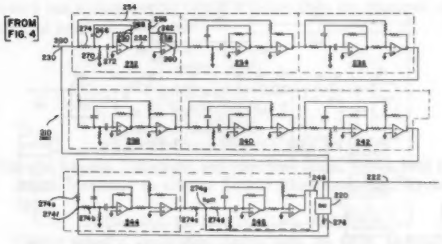


1. A modulation circuit including a pulse width modulation switch in the form of a switchable tube having a grid electrode to which, in operation, is applied a pulse width modulation control signal and a screen electrode; means for applying a substantially constant bias current to said screen electrode for those periods during which the tube is rendered conductive by the application of a suitable control signal to the grid electrode; and a low pass filter connected between said switchable tube and an output terminal of the modulation circuit to attenuate frequencies at the switching frequency of said control signal.

4,272,738
PROGRAMMABLE DELAY RESPONSE SHAPE BULK DELAY EXTENDER

James F. Turner, Oakton, Va., assignor to Convex Corporation, Fairfax, Va.

Filed Apr. 25, 1978, Ser. No. 899,936
Int. Cl.[3] H03H 7/03; H04B 3/14
U.S. Cl. 333—28 R 24 Claims



1. A line conditioner or equalizer to produce various delay response shapes or effect a complete bypass of a programmable bulk delay extender comprising

a cascade of all pass sections including a first all pass section and a final all pass section, each of said all pass sections having an input junction, an output junction, band pass filter and summing amplifier means for processing signals in which said sections introduce delay of said signals,

said band pass filter including an operational amplifier having a positive input terminal connected to ground, a negative input terminal and an output terminal, a resistor connected between the output terminal and the negative input terminal of the operational amplifier, a capacitor connected between a junction point and said negative input terminal, a second capacitor connected between said junction point and said output terminal, two of said all pass sections having a resistor network comprising two resistors in series respectively connected between said junction point and the input junction of said respective all pass section,

said summing amplifier means comprising of a further operational amplifier with a negative input terminal, a positive input terminal connected to ground and an output terminal connected to said output junction, a single resistor connected between the output terminal and the negative input terminal of said further operational amplifier,

a summing resistive network comprising a first resistor connected between the negative input terminal of said further operational amplifier and the input junction of said respective all pass section and a second resistor connected between the negative input terminal of said further operational amplifier and the output terminal of said operational amplifier of said band pass filter,

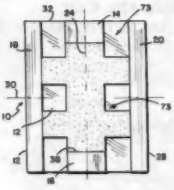
and switching means including a single multi-position rotary switch having six (6) terminals, one being connected to ground; two being respectively connected to an intermediate node of the two resistor network of said two all pass sections; one being connected to said input junction of said first all pass section for effecting a complete bypass of said bulk delay extender; one being connected to the output junction of said final all pass section; and one being a common output terminal,

said switching means selectively neutralizing delay introduced by one or two sections of the cascade of all pass sections thereby effecting a programmable delay response shape, bulk delay extender.

4,272,739
HIGH-PRECISION ELECTRICAL SIGNAL ATTENUATOR STRUCTURES

Morton Nesses, 715 Carmen Plz., Greenwood, Ind. 46142

Filed Oct. 18, 1979, Ser. No. 85,967
Int. Cl.[3] H01P 1/22
U.S. Cl. 333—81 A 15 Claims



1. An electrical signal attenuator for insertion into a line, comprising:

a dielectric substrate;

an input electrode, an output electrode, and two shunt electrodes, all provided on a surface of the substrate, the input and output electrodes being positioned on the substrate for coupling to a conductor of the line and the two shunt electrodes being positioned on the substrate for coupling to another conductor of the line;

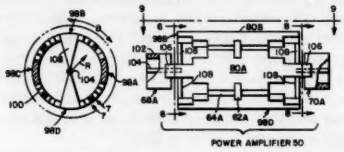
a distributed resistance film element positioned on the substrate surface among the four electrodes, the distributed resistance film element comprising a center portion, a first leg for coupling the center portion to the first electrode, a second leg for coupling the center portion to the second electrode, a third leg for coupling the center portion to one of the shunt electrodes, and a fourth leg for coupling the center portion to the other shunt electrode.

4,272,740

COAXIAL-TO-CYLINDRICAL ARRAY TRANSITION

George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 103,028
Int. Cl.[3] H01P 3/08
U.S. Cl. 333—127 12 Claims



1. A system comprising:

a set of longitudinal conductive members positioned along a cylindrical surface, each of said members having side walls directed normally to said surface;

opposed walls of neighboring ones of said members defining parallel-walled transmission lines, there being an even number of said members;

first and second coaxial transmission lines;

alternate ones of said members having ends which are tapered via a stepped transmission line configuration to terminals thereof, said terminals being coupled to the center conductors of said coaxial transmission lines; and

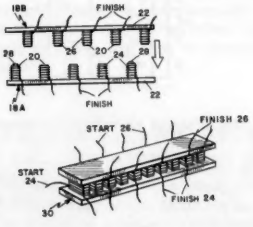
the remaining ones of said members being tapered via a stepped transmission line configuration to terminals thereof, said terminals of said remaining members being coupled to an outer conductor of said coaxial transmission lines.

4,272,741

INDUCTIVE DELAY LINE AND METHOD OF MAKING

Jacobus J. M. Vanderknyff, Oceanside, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 9, 1979, Ser. No. 27,992
Int. Cl.[3] H03H 7/20, 7/32, 3/00
U.S. Cl. 333—138 11 Claims



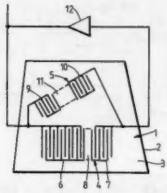
1. An inductive delay line, including an inductive component comprising a pair of multiple bobbin elements, each having an elongated connecting plate with a plurality of posts of inductive material projecting perpendicularly from one side, the posts on each element being spaced to interfit with the posts of the other element when the two elements are joined with the connecting plates forming a spaced parallel pair of outside walls of the component and with said posts extending in a row therebetween in longitudinally spaced relationship; and a wire coil inductive winding on each of said posts.

4,272,742

ACOUSTIC WAVE DEVICES WITH TEMPERATURE STABILIZATION

Meirion F. Lewis, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 21, 1979, Ser. No. 77,703
Claims priority, application United Kingdom, Sep. 22, 1978, 37867/78
Int. Cl.[3] H03H 9/42, 9/68, 9/25; H01L 41/18
U.S. Cl. 333—155 15 Claims



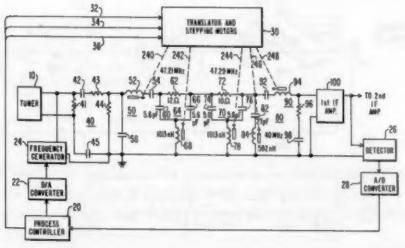
1. An acoustic wave device comprising at least two acoustic components each having transducer means for launching and receiving acoustic waves along an acoustic track in a substrate, said acoustic components having their respective transducer means electrically connected to one another in parallel and each having a similar phase slope but different temperature coefficients whereby the resultant overall frequency response of the device is compensated over a useful temperature range.

4,272,743

METHOD FOR TUNING A FILTER CIRCUIT

Robert M. Evans, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 32,026
Int. Cl.[3] H03H 3/00, 7/01
U.S. Cl. 333—176 8 Claims



1. A method of tuning a trap circuit to locate the frequency at which the trap provides maximum attenuation at a desired frequency comprising the steps of:

(a) applying a constant amplitude signal, of successively different frequencies in a progression of frequency increments, over a given frequency range including said desired frequency, to said trap circuit, while

(b) detecting the amplitude of said signal as modified by said trap circuit at each of said different frequencies, and

(c) sequentially storing said detected amplitudes;

(d) comparing successive ones of said stored amplitudes until an amplitude difference is found which is greater than a predetermined minimum difference and is of a polarity indicative of an increase in amplitude with said progression, and is a successor of an amplitude difference which is greater than said predetermined minimum difference and

is of a polarity indicative of a decrease in amplitude with said progression; and

(e) adjusting said trap circuit in accordance with the frequency difference between the frequency of inflection indicated by said first named amplitude difference and said desired frequency.

4,272,744

RECTANGULAR WAVEGUIDE ELBOW BENT ACROSS THE BROAD SIDE OF THE WAVEGUIDE WITH CORNER FLATTENING AND A TRANSVERSE BAR

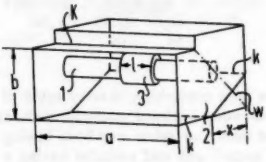
Eberhard Schuegraf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,174

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903665

Int. Cl.³ H01P *1/02*

U.S. Cl. 333—249 **3 Claims**



1. A rectangular waveguide elbow bent across the broad side of the waveguide with an outer corner symmetrically angled by means of a conductive flattening plane, characterized in that a cylindrical, conductive cross-bar (1) is mounted parallel to the broad sides of the waveguide and extends between the narrow sides of the waveguide line opposite one another and is mounted with its center axis at the geometrical median (w) of the bend, and the condutive cross-bar (1) has an enlarged portion (3) symmetrically arranged at the center of the bar and which has a diameter d_Q which is larger than the diameter of the end portions of the bar.

4,272,745

ELECTROMAGNETIC RELAY

Takashi Tanaka, Takatsuki, and Hirofumi Koga, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

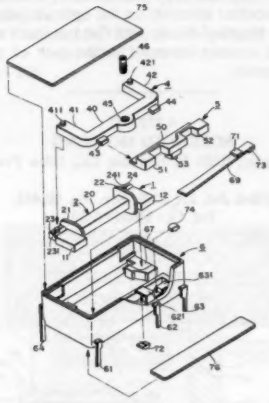
Filed Jun. 13, 1979, Ser. No. 48,157

Claims priority, application Japan, Jun. 30, 1978, 53-80321; Jun. 30, 1978, 53-80323

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—128 **8 Claims**

1. An electromagnetic relay comprising a bracket-shaped stationary core having a main portion and two leg portions, a spool having two end flanges on opposite sides of the axial extent of said spool, said spool being secured to said stationary core, a coil wound around said spool, an armature, and a pair of contacts comprising a movable contact and a stationary contact which are closed or opened in response to the movement of said armature, said spool having a pair of engaging portions on opposite sides thereof extending from said end flanges, said armature being a bracket-shaped member having a main portion and two leg portions, said leg portions being engaged with said engaging portions of said spool whereby said armature is pivotally supported by said engaging portions to close or open said contacts in response to a current applied to said coil for forming a closed magnetic circuit between said stationary core and said armature, said engaging portions being



located in positions respectively opposite to said leg portions of said stationary core.

4,272,746

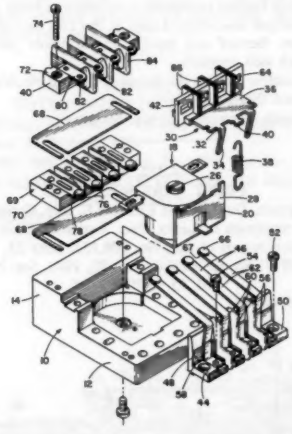
FOUR POLE DOUBLE THROW RELAY

William W. Wright, Wheaton, and Frank S. Vojir, Downers Grove, both of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Aug. 9, 1979, Ser. No. 65,097

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—128 **11 Claims**



1. An improved double throw multipole relay comprising, in combination:

(a) a base member;

(b) a coil member on the base member intermediate the sides of the base member and including a vertical field piece core for the coil;

(c) a terminal block on one side of the coil including at least one flexible contact blade attached thereto and extending as a cantilever over the coil core to the opposite side of the core, said blade terminating with a contact;

(d) an armature lifter affixed to a spring biased armature on the field piece, said lifter including an opening for receipt

of the flexible contact blade, said opening defining a predetermined gap between the blade and lifter whereby said lifter is moved through said gap width prior to engagement with the blade upon actuation of the relay; and

(e) a fixed contact assembly on the opposite side of the coil from the terminal block, said fixed contact assembly including a contact mounted in the path of said flexible blade contact.

4,272,747

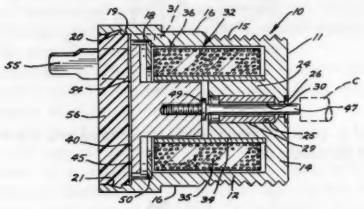
SOLENOID HOUSING

Patrick G. Bauer, 9150 E. Starring La., Eden Prairie, Minn. 55344

Filed Jul. 25, 1979, Ser. No. 60,481

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—257 **12 Claims**



1. In a solenoid,

(a) a housing having an externally threaded cylindrical side wall and a bottom wall integrally formed therewith,

(b) the bottom wall having an axially centered aperture,

(c) an energizable electric coil disposed within the housing and having upwardly extending leads,

(d) an armature comprising a head and actuator pin, the head of which further comprises a cylindrical body portion and an enlarged disc-shaped cap, in the coil movable by energization thereof and having the actuator pin extending through said aperture,

(e) a dielectric cap on the housing having electric terminals mounted thereon, and

(f) said leads connected to said terminals.

4,272,748

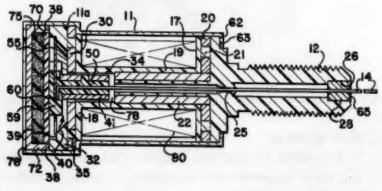
PRINT WIRE SOLENOID

Philip E. Fugate, Dayton, and Kenneth L. Roy, Centerville, both of Ohio, assignors to Ledex, Inc., Vandalia, Ohio

Continuation-in-part of Ser. No. 908,153, May 22, 1978, Pat. No. 4,200,401. This application Jan. 30, 1980, Ser. No. 116,718

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—271 **4 Claims**



1. In a high speed axial type solenoid suitable for use as a printing solenoid and the like, having an axially movable armature therein, the improvement comprising:

means in said solenoid defining a datum plane,

solenoid armature impact plate means positioned at said plane and defining a rest position for the armature,

a solenoid wall,

means defining a quantity of energy absorbing elastomeric material positioned between said wall and said plate means, and

means at said datum plane engaging said plate means and normally retraining said material in precompression.

4,272,749

REACTOR CORE OF INSULATED IRON POWDER

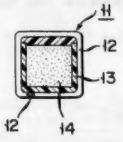
Toshihiko Tuji, Tokyo, Japan, assignor to Nippon Kinzoku Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 821,150, Aug. 2, 1977, abandoned. This application Aug. 30, 1979, Ser. No. 71,260

Claims priority, application Japan, Aug. 9, 1976, 51-94647

Int. Cl.³ H01F *27/24*

U.S. Cl. 336—233 **3 Claims**



1. A reactor core comprising: a body made of particles of iron power providing a closed magnetic path, said particles being insulated from each other, said body having a density of from 2 to 6.5 g/cm³, and said particles having a Tyler mesh size from 100 to 300.

4,272,750

POWER BREAKER APPARATUS

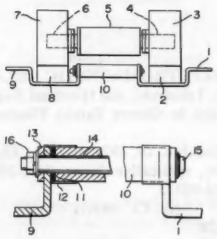
Shigenori Hotta, and Sadaaki Baba, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,159

Claims priority, application Japan, Aug. 24, 1978, 53/115979[U]

Int. Cl.³ H01H *87/00*

U.S. Cl. 337—1 **5 Claims**



1. A power breaker apparatus comprising a permanent fuse and at least one resistor connected in parallel to said permanent fuse through a connecting conductor having a pair of terminals, and being connected between a power source and a load current supply to break said current supply to said load when a fault current is passed, wherein said at least one resistor comprises:

a resistor element, said resistor element having two ends, one of said ends adjacent each of said terminals;

an insulating coating material coating each of said ends;

means for securing each of said ends to a respective terminal, said securing means being electrically insulated from said resistor element and said pair of terminals; and

easily deformable conductive spacing means between each of said ends and said respective terminal;

wherein said insulative coating material covers said conductive spacing means,

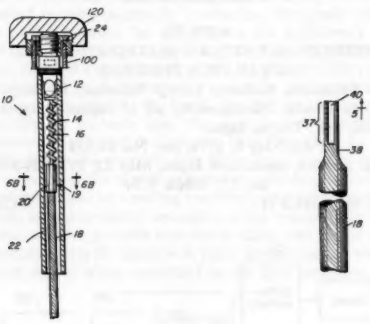
whereby said conductive spacing means is deformed by the securement of each of said ends to said respective terminal so as to ensure electrical contact therebetween.

4,272,751

HIGH-VOLTAGE FUSE LINK AND METHOD OF MANUFACTURING SAME

Bruce A. Biller, and Hiram S. Jackson, Jr., both of Chicago, Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Jun. 25, 1979, Ser. No. 51,933
Int. Cl.³ H01H *69/02, 85/36*
U.S. Cl. 337—231 **16 Claims**



10. An improved fuse link of the type wherein an end of a fusible element is attached to an end of a flexible multi-strand cable, wherein the improvement comprises:

(a) an end segment of the cable subjected to sufficient compressive force to cold-form the strands thereof into a compact, relatively inflexible mass of decreased cross-sectional area, and

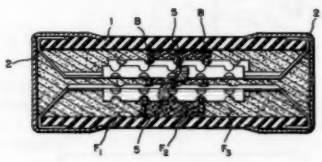
(b) a receiving region formed in the segment, into which the end of the fusible element is placed, the receiving region being collapsed by compressive force to mechanically and electrically attach the end of the fusible element to the cable.

4,272,752

ELECTRIC FUSE INCLUDING TWO DIFFERENT FILLERS

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 30, 1979, Ser. No. 62,078
Int. Cl.³ H01H *85/18*
U.S. Cl. 337—276 **6 Claims**



1. An electric fuse comprising:

(a) a casing of electric insulating material,

(b) terminal caps disposed on the ends of the casing,

(c) fusible element means arranged inside said casing and electrically interconnecting said terminal elements,

(d) a plurality of differing arc quenching materials arranged in layers within said casing and embedding said fusible element means, and

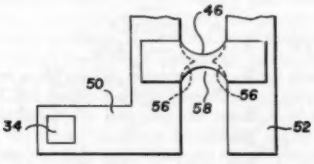
(e) electrically insulative barrier means introduced in a fluid state between said layers so as to conform to the geometry of said fusible element means and to the surface of said layers and thereby establish an essentially impermeable barrier between said layers.

4,272,753

INTEGRATED CIRCUIT FUSE

Hugh C. Nicolay, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 934,150, Aug. 16, 1978, Pat. No. 4,198,744.
This application Oct. 18, 1979, Ser. No. 86,097
Int. Cl.³ H01H *85/10*
U.S. Cl. 337—297 **1 Claim**



1. An integrated circuit having a substrate and an insulating layer thereon and comprising:

a plurality of discrete interconnects on said insulating layer;

at least one fuse element on and extending across a pair of said interconnects and separated from said insulating layer;

said fuse including a necked portion extending across said pair of interconnects; and

said pair of interconnects each including a tapered portion extending below said necked portion and separated from each other by a gap below said necked portion.

4,272,754

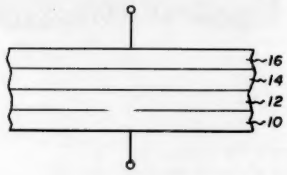
THIN FILM VARISTOR

Liang F. Lou, Liverpool, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,564

Int. Cl.³ H01C 7/10

U.S. Cl. 338—21 **20 Claims**



1. A nonlinear heterojunction resistor comprising in layered relationship:

a thin film layer of a first metal;

a thin film layer of a first metal oxide;

a thin film layer of a second metal oxide;

a thin film layer of a second metal.

4,272,755

DEVICE FOR INDICATING INSUFFICIENT INFLATION PRESSURE IN VEHICLE TIRES

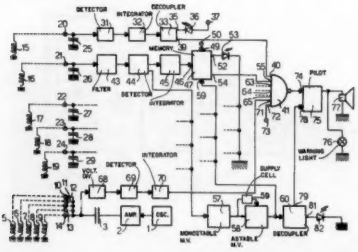
Costantino Broetto, Milan, Italy, assignor to Fratelli Borletti S.p.A., Milan, Italy

Filed Aug. 6, 1979, Ser. No. 63,826

Claims priority, application Italy, Sep. 1, 1978, 69035 A/78

Int. Cl.³ B60C 23/02

U.S. Cl. 340—58 **31 Claims**



1. A device for indicating insufficient inflation pressure in vehicle tires, comprising an emitter coil supplied by a signal generator at a determined frequency, and a receiver coil, said emitter and receiver coils being housed on a fixed support of said vehicle in proximity to each rotating wheel so that they cannot be inductively coupled together but can be coupled together only by a respective coupling circuit disposed on each wheel, said coupling circuit comprising a first and a second transfer coil connected in series with an electrical contact operated by a transducer sensitive to the values of said pressure in said tire; said transfer coils being disposed in said wheel in such a manner as to allow said receiver coil to periodicically receive a signal supplied by said generator to said emitter coil when the transfer coils respectively face said emitter coil and said receiver coil and if said electrical contact has closed said coupling circuit due to said pressure exceeding a minimum set value; said signal periodically received by each of said receiver coils being fed to relative memory means and control means adapted to automatically activate said memory means so that they receive said signal only when said vehicle has a speed exceeding a set minimum speed, and consequently said signal received periodically by said receiver coil has a repetition frequency exceeding a minimum set value; said control means comprising a supply cell and an astable multivibrator controlled by said supply cell, said multivibrator when activated producing an output signal which actuates said memory units, said supply cell activating said mutivibrator only when said cell receives said signal at a frequency exceeding said minimum set value, whereby the average energy of the signal exceeds a predetermined value; the output signal from said memory means being arranged to activate alarm means if there is no reception of said signal from at least one of said receiver coils due to a reduction in inflation pressure below said minimum set value.

4,272,756

METHOD OF PATTERN RECOGNITION AND APPARATUS THEREOF

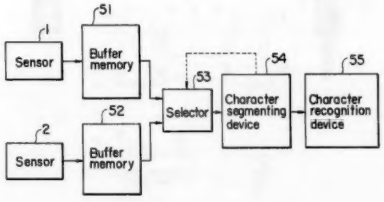
Shigeru Kakumoto, Kodaira; Yoshiji Fujimoto, Hachioji, and Kunihiro Okada, Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1979, Ser. No. 37,034

Claims priority, application Japan, May 22, 1978, 53-59933

Int. Cl.³ G06K 9/34

U.S. Cl. 340—146.3 H **8 Claims**



1. A method for recognizing at least one line pattern in a picture comprising:

a first step of converting an image of a desired partial picture in the picture into pattern signals, said picture being constructed of a plurality of partial pictures formed by dividing said picture, adjacent ones of said partial pictures having in common a partially-overlapped region;

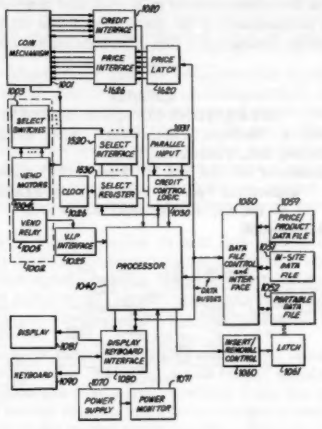
a second step of recognizing the coordinates of feature points representing a partial line pattern in each partial picture on the basis of the pattern signals obtained in said first step; and

a third step of connecting the partial line patterns in the respective partial pictures on the basis of the coordinates obtained in said second step thereby recognizing the line pattern of the whole of the picture.

4,272,757
VENDING MACHINE ACCOUNTABILITY SYSTEM

Donald L. McLaughlin, Newtown Square, and Elwood E. Barnes, Parkesburg, both of Pa., assignors to Mars, Incorporated, McLean, Va.

Filed Apr. 5, 1979, Ser. No. 27,377
Int. Cl.³ H04Q *9/00;* **G06F** *7/00;* **G06M** *3/12;* **G07D** *9/00*
U.S. Cl. 340—152 R **6 Claims**



1. An accountability system for a vending machine having means for vending products, means for crediting the value of deposited monies, means for comparing the credit with the price of the product for determining the sufficiency of the credit and any excess of credit, and means for dispensing change equal to any excess of credit; the accountability system comprising digital data processor means for collecting transaction data, an in-site data file for storing the transaction data, an exchangeable, portable data file module for recording the transaction data stored in the in-site data file, means for updating the data in the portable data file module prior to removal and exchange of the module, means for recording an identification of the particular vending machine in the portable data file module, means to inhibit operation of the vending machine in the absence of a portable data file module, and means to lock the portable data file module in place in the vending machine, the lock means being controlled by the data processor.

4,272,758
ARRANGEMENT FOR PROVIDING A POWER SUPPLY AND TRANSMITTING ELECTRICAL SIGNS BETWEEN TWO DEVICES USING A SMALL NUMBER OF CONTACTS

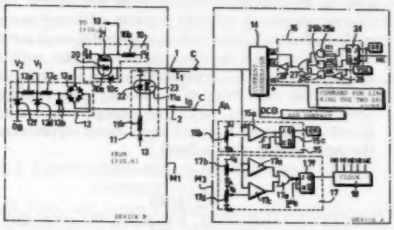
Georges Giraud, Le Vesinet, France, assignor to Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme), Paris, France

Filed Sep. 12, 1978, Ser. No. 941,674
Claims priority, application France, Sep. 16, 1977, 77 28048
Int. Cl.³ H04B *3/60;* **H04Q** *1/38*
U.S. Cl. 340—310 A **20 Claims**

1. An arrangement for providing a power supply and transmitting data signals between first and second devices by means of a pair of contacts, which arrangement is capable of allowing digital data signals to be exchanged between said devices and at least one operating voltage to be fed from said first device to said second device, said arrangement comprising:

a modulated current generator in the first device connected to the contacts for transmitting the data signals from the first to the second device by modulating the duration of two currents of different intensities, the contacts thereby conveying an electrical signal;

an amplitude modulator in the second device for transmitting data signals from the second device to the first device by modulating the amplitude of the electrical signal conveyed by the contacts; and

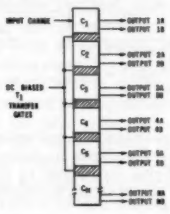


a network in the second device for producing operating voltage in the second device, said network being connected via a unidirectional current conduction member to the contacts.

4,272,759
16 BIT ANALOG TO DIGITAL CONVERTER

Roland J. Handy, Northridge, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,254
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **3 Claims**



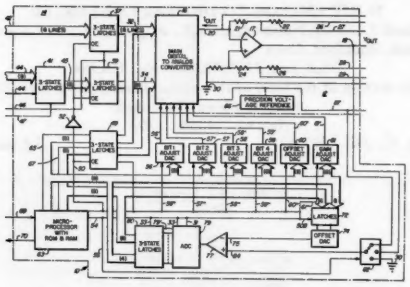
1. In an analog to digital converter wherein on a single integrated circuit chip utilizing charge transfer technology is a cell comprising input gate means for receiving an input analog signal represented by packets of charge; transfer gate means coupled to said input gate means for transferring any such packets of charge; said transfer gate means comprising first and second transfer gates in charge packet transfer relationship with said input gate means, said first transfer gate transferring an excess of a predetermined charge, and said second transfer gate transferring a charge at or below said predetermined charge, the charge levels being determined by the depletion levels established by applied voltage levels; output gate means including charge sensing amplifier gate means coupled to said transfer gate means for detecting the presence of charged transferred, an excess of charge transferred, or no charge transferred, the output of said output gate means being a pair of digital logic voltage signals indicitive of these three conditions, said charge sensing amplifier means comprising a master gate and a slave gate in charge packet transfer relationship with said first and second transfer gates, said master and slave gates having an externally applied voltage potential thereto which is independent from other applied voltages, said master gate inducing a change in the potential in said slave gate whereby said slave gate blocks the transfer of charge from said second transfer gate when said master gate detects an excess charge transferred by said first transfer gate; the improvement comprising:

a plurality of said cells arranged on said single integrated circuit chip in charge transfer proximity to thereby form an analog to digital register of said plurality of cells, said register including an additional transfer gate between said cells to effect charge transfer from cell to cell, whereby charges in excess of that capable of being transferred within a first cell are transferred to said second cell by said transfer gate and on through the register until all the incoming charge is transferable within the cells, the output of these cells being of a different logic configuration than those cells to which no charge was transferred, thereby indicating a digital logic signal representation of the input analog charge level.

4,272,760
SELF-CALIBRATING DIGITAL TO ANALOG CONVERSION SYSTEM AND METHOD

Paul R. Prazak, and Theodore L. Williams, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Apr. 10, 1979, Ser. No. 28,667
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 CC **16 Claims**



1. A method for automatically calibrating a first digital to analog converter, said first digital to analog converter including a plurality of digital inputs and an output terminal for producing an analog output signal, said method comprising the steps of:

(a) applying a first pattern of logic signals to the inputs of said first digital to analog converter and also applying at least a portion of said first pattern of logic signals to the address inputs of a memory for storing a plurality of correction codes;

(b) performing a digital to analog conversion of said first pattern of logic signals to produce a first output voltage;

(c) temporarily maintaining a first analog signal representative of said first output voltage;

(d) applying a second pattern of logic signals to the inputs of said first digital to analog converter and also applying a portion of said second pattern of logic signals to the address inputs of said memory;

(e) performing a digital to analog conversion of said second pattern of logic signals to produce a second output voltage;

(f) comparing said first analog signal to said second output voltage to produce a first difference signal;

(g) performing an analog to digital conversion of said first difference signal to produce a first digital word;

(h) computing a first correction code based n said first digital word;

(i) writing said first correction code into a first location of said memory determined by said first pattern of logic signals;

(j) applying said first pattern of logic signals to the inputs of the first digital to analog converter and also applying said portion of said first pattern of logic signals to the address inputs of said memory;

(k) performing a digital to analog conversion of said first pattern of logic signals to produce said first output current;

(l) fetching said first correction code from said first location of said memory, said first location being addressed by said portion of said first pattern of logic signals;

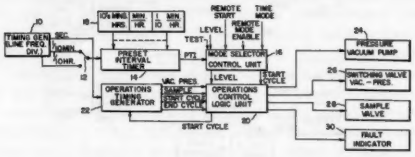
(m) performing a digital to analog conversion of said first correction code to produce a first correction current; and

(n) adding or subtracting a predetermined proportion of said first correction current to or from said first output current to compensate for an error in said first output current, thereby producing a first corrected output current.

4,272,761
OPERATIONS CONTROL SYSTEM

Raymond A. Newman, Cheektowaga, N.Y., assignor to NP Industries, Inc., Tonawanda, N.Y.

Continuation of Ser. No. 858,747, Dec. 8, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,319
Int. Cl.[3] G08B *23/00*; B67D *5/08*
U.S. Cl. 340—500 **14 Claims**

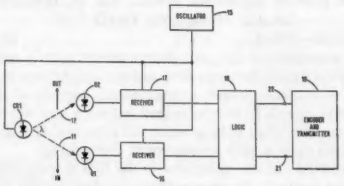


1. An operations control system for an effluent monitoring system for controlling a cycle of successive operations upon occurrence of each passage of a predetermined period of time and any of a plurality of different effluent monitoring events so that said operations occuur in predetermined time sequence, said system comprising timing generator means for generating timing signals which occur repetitively with constant periodicity, preset interval timing means for producing first outputs at preset time intervals equal to said predetermined period of time, means responsive to said events and to said preset interval timing means first outputs for generating a start command upon occurence of said first outputs and of any of said plurality of effluent monitoring events, operation timing means responsive to said timing signals and to said start command for producing a cycle of second outputs corresponding to different ones of said successive operations, and operations control means operated by said second outputs for controlling each of said operations.

4,272,762
EXIT-ENTRY SENSING APPARATUS

William L. Geller, and Richard L. Naugle, both of Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

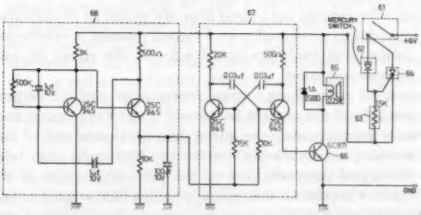
Filed Sep. 17, 1979, Ser. No. 75,769
Int. Cl.[3] G08B *13/18*
U.S. Cl. 340—556 **9 Claims**



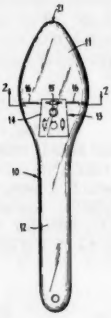
1. Sensing apparatus for monitoring the passage of objects through a portal including in combination

a source of radiant energy mounted at one side of the portal;
first and second radiant energy detectors mounted at the opposite side of the portal for receiving first and second beams of radiant energy, respectively, directed across the portal from said source of radiant energy;
said radiant energy detectors being spaced apart in the direction of movement of objects through the portal so that an object passing through the portal in one direction interrupts the first beam of radiant energy and then the second beam of radiant energy and an object passing through the portal in the opposite direction interrupts the second beam of radiant energy and then the first beam of radiant energy;
said first radiant energy detector being operable to produce a first signal condition when receiving radiant energy from said source and to produce a second signal condition when not receiving radiant energy from said source;
said second radiant energy detector being operable to produce a first signal condition when receiving radiant energy from said source and to produce a second signal condition when not receiving radiant energy from said source;
first receiver means coupled to said first radiant energy detector for producing a first output condition in response to the first signal condition from the first radiant energy detector and a second output condition in response to the second signal condition from the first radiant energy detector;
second receiver means coupled to said second radiant energy detector for producing a first output condition in response to the first signal condition from the second radiant energy detector and a second output condition in response to the second signal condition from the second radiant energy detector;
logic means coupled to the first and second receiver means and having first and second operating states, said logic means being switched to said first operating state in response to the output condition from said first receiver means changing from the first to the second output condition while the second receiver means is producing its first output condition and being switched to said second operating state in response to the output condition from said second receiver means changing from the first to the second output condition while the first receiver means is producing its first output condition;
whereby passage of an object through the portal in the one direction causes the logic means to operate in said second operating state and passage of an object through the portal in the opposite direction causes the logic means to operate in said first operating state.

4,272,763
SECURITY ATTACHE CASE WITH AUTOMATIC ALARM SYSTEM
Ben-Lee Chang, 12-7 Fl., 100, 3 Sec., Roservolt Rd., Taipei, and Me-Fei Lee, P.O. Box 26-18, Taichung, both of Taiwan
Filed Aug. 31, 1979, Ser. No. 71,700
Int. Cl.[3] G08B *13/14, 15/00*
U.S. Cl. 340—571 **7 Claims**


66
67
MERCURY SWITCH
61
+6V
62
64
65
63
500K
500Ω
20K
0.03μf
1K
20K
1K
20K
1K
10K
10K
10

circuitry having one or more dipoles connected thereto for receiving wave propagated electromagnetic energy such as microwave energy and providing a signal to said electrical circuitry related to the level of said energy, said circuitry being adapted to operate an associated visual warning device when



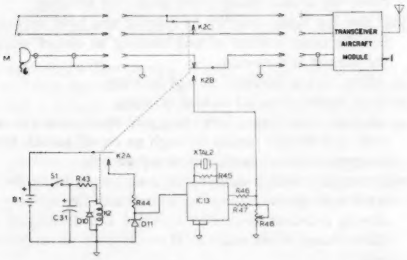
said level exceeds a predetermined maximum level, said circuitry being fully encased in a substantially solid block of material in a manner whereby said warning device is externally visible and said block having a specific gravity greater than that of water such that said arrangement is caused to sink when placed in water.

4,272,766

RADIO OPERATED REMOTE CONTROL

Wesley G. Stucker, and Richard J. Coles, Jr., both of Houston, Tex., assignors to Darlene M. Koch; Robert H. Koch, both of Alison Park, Pa.; Viola C. Coles, Houston, Tex.; Maurice Guy Reynolds, Houston, Tex.; Lydia M. Reynolds, Houston, Tex.; J. P. Carlson, Jr. and Carolyn Carlson, both of Pampa, Tex.

Filed Feb. 8, 1979, Ser. No. 10,418
Int. Cl.[3] B60Q *1/02*
U.S. Cl. 340—696 **2 Claims**



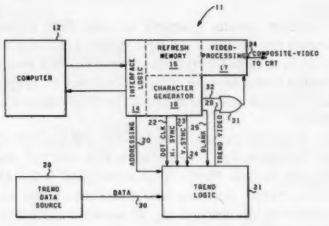
1. In a radio signal device, a transmitter for transmitting a dual tone multi frequency signal through standard radio equipment, a decoder for receiving said signal and closing a switch in a remote location to effect the actuation of a control switch to light an airfield said device consists of a pair of modules, one mounted in the aircraft and the other mounted in the air field control tower, the first mentioned module having means for manually activating one set of contacts which directs a circuit therethrough at a predetermined voltage to a tone generator, another set of contacts also actuated by said switch which transfers the input from the aircraft microphone and connects it to the output of the tone generator and which actuates still another set of contacts to key the transmitter so the tones will be broadcast to the second module which will receive the signal and direct same to four stages of programmable level adjustments, the first two stages being attenuators and the second two stages being amplifiers, directing the output through active filters, resistors and capacitors, to produce an output of sine waves, which will be converted to square waves and amplified to TTL compatible levels and into a decoder, the signal is then verified and sets a latch, which it then conducts and energizes to activate a contactor which turns on the lights at the airport.

4,272,767

DISPLAY SYSTEM FOR DISPLAYING INFORMATION IN THE FORM OF A HORIZONTALLY ORIENTED CURVE ON A RASTER-TYPE CRT

Robert H. Lacy, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 26, 1979, Ser. No. 52,294
Int. Cl.[3] G08B *5/36*
U.S. Cl. 340—722 **16 Claims**



1. Apparatus for producing a horizontally oriented curve on a raster-type cathode-ray tube display, comprising:

a cathode-ray tube;

means for producing a raster on said cathode-ray tube having horizontal scans alternating with retraces;

means for producing a new curve data point signal representative of the vertical height of a dot to be displayed on said cathode-ray tube;

a memory means having a plurality of memory locations in sequence, each of said plurality of memory locations corresponding to a respective one of the horizontal positions on said cathode-ray tube where curve data points may be displayed;

means for shifting any curve data points in said memory means to the next memory location in sequence in said memory means;

means for transferring said new curve data point signal from said means for producing said new curve data point signal to the initial memory location in said memory means, the procedure of producing a new curve data point, shifting the curve data points in said memory means to the next memory location in sequence, and transferring the new curve data point to the initial memory location in said memory means continuing until a desired horizontal curve has been stored in said memory means;

means for reading out of said memory means all of the curve data points contained in said memory means in synchronization with each horizontal scan of the raster on said cathode-ray tube;

means for establishing a signal representative of the vertical position of the current horizontal scan of the raster; and

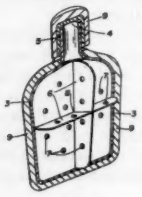
means for comparing the curve data point read out of said memory means during the current horizontal scan with the signal representative of the vertical position of the current horizontal scan and applying a video signal to said cathode-ray tube to produce a dot on the screen of said cathode-ray tube when the thus compared signals are equal.

4,272,768

MULTI-PURPOSE SURVIVAL CANTEEN

Johnnie P. Rookard, Jr., 1061-72nd Ave., Apt. 4, Oakland, Calif. 94621

Filed Jan. 21, 1980, Ser. No. 113,442
Int. Cl.[3] H01Q *15/18;* B65D *1/04*
U.S. Cl. 343—18 C 7 Claims



1. A survival canteen comprising:

a substantially microwave transparent vessel for holding liquid, having a sealable mouth;

said vessel having internal microwave reflective baffles dividing the vessel into chambers and openings between the chambers to allow damped fluid flow therebetween; and

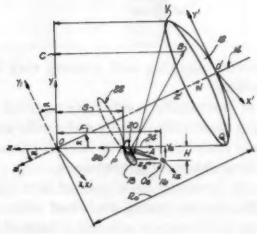
said baffles positioned to define at least one corner reflector.

4,272,769

MICROWAVE ANTENNA WITH PARABOLIC MAIN REFLECTOR

Frederick A. Young, 17502 Berlark Cir., Huntington Beach, Calif. 92649, and Willard V. T. Rusch, 800 S. Hudson, Pasadena, Calif. 91106

Filed Aug. 27, 1979, Ser. No. 69,968
Int. Cl.[3] H01Q *19/14*
U.S. Cl. 343—781 P 8 Claims



6. In a conical scanning microwave antenna, comprising: a primary reflector, having an axis and consisting of an axially symmetric surface of revolution about the primary reflector axis, and having a peripheral edge, and an aperture plane, defined as the x,y plane in an x,y,z coordinate system with an origin O on the primary reflector axis and rotated an angle α in the y,z plane from the primary reflector axis; a subreflector, which subreflector has an apex; a spherical-wave point source of microwave energy; and, the spherical-wave point source being located at an origin O_s of an x_s, y_s, z_s coordinate system, wherein the x_s, y_s, z_s coordinates are parallel, respectively, to the x, y and z coordinates, and the y_s, z_s plane is coplanar with the y, z plane, the improvement comprising:

the origin O_s being located a fixed distance, co-linear with y_s, below the z axis, an extension of which forms a line in the y,z plane, said line intersecting the primary reflector axis at an angle α and intersecting the peripheral edge of the primary reflector normal to the surface of the primary reflector at the point of intersection with the peripheral edge;

the subreflector being positioned and having a surface contour such that in the transmit mode a ray from the point source reflecting from the subreflector at the apex onto the primary reflector, travels along the extension of the z axis and reflects, from the point of intersection of the extension of the z axis and the peripheral edge, back along the extension of the z axis and intersects the primary reflector axis and travels a fixed distance from the point source, to said surface of the subreflector, to said point of intersection with the pheripheral edge, to the point of intersection with the primary reflector axis; and,

for rays from the point source incident upon said surface of the subreflector there are corresponding reflections onto a point on the primary reflector which result in a reflection from that point, which is parallel to the z axis and has the same distance of travel from the point source, to the subreflector, to the primary reflector, to the x,y plane, as did the said ray reflected from the apex of the subreflector;

the subreflector having a surface defined such that for every ray, represented by the vector R_s, originating from the point source origin O_s and incident upon said surface of the subreflector, a unit vector n_s normal to said surface of the subreflector is defined, at the point of incidence upon said surface of the subreflector, as

$$n_s = -u/|u|$$

where:

$$u = \hat{m}_s + \hat{r}_s$$

and where $\hat{r}_s$, a unit vector along R_s is defined as

$$\hat{r}_s = \frac{R_s}{|R_s|} = \frac{x_s \hat{a}_x + Y_s \hat{a}_y + z_s \hat{a}_z}{K + z - C(x,y)}$$

wherein a_x, a_y and a_z are unit vectors along the x,y,z axes, and C(x,y) is the distance between the point of incidence of the ray on said surface of the subreflector and the point of incidence of the reflected ray upon the primary reflector and is defined as:

$$C(x,y) = \frac{1}{2} \frac{(K+z)^2 - |RF|^2}{(RF \cdot \hat{m}) + K + z}$$

K = a constant

$$= \sqrt{H^2 + (F-S)^2} + D/\sin\alpha - S$$

$x_s = x + C(x,y)m_x$

$y_s = y + H + C(x,y)m_y$

$z_s = z + F + C(x,y)m_z$

wherein H is the distance along the y_s axis between the source and the extension of the z axis, F is the coordinate along the extension of the z axis of the distance between **0** and the point source, S is the coordinate along the extension of the z axis of the distance between **0** and the apex of the subreflector, D is the diameter of the primary reflector, and m is a unit vector in the direction from the point of incidence of the reflected ray upon the primary reflector, with m_x, m_y, and m_z being the x, y and z components of m; and,

RF is the vector between O_s and the point of incidence upon the primary reflector and is defined as:

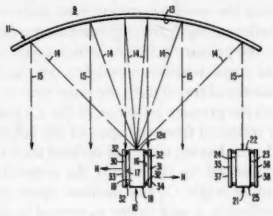
$$RF = x\hat{a}_x + (y+H)\hat{a}_y + (z+F)\hat{a}_z.$$

4,272,770

REFLECTOR ANTENNAE APPARATUS FOR LIMITING APERTURE BLOCKAGE

Coleman J. Miller, Arnold, and Daniel Davis, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,323
Int. Cl.[3] H01Q 15/10, 19/13
U.S. Cl. 343—782 11 Claims



1. An antennae reflector assembly having a surface for reflecting transmitted wave energy in a predetermined direction, comprising:

at least one aperture blocking structure with a frontal area facing the reflecting surface and sidewalls having a surface area substantially parallel to both the direction and E-field of the reflected wave energy,

a board of insulating material having a plane surface for each of the sidewalls, each of said boards being substantially similar to its respective sidewall in both area and configuration and having a plurality of spaced conductive portions disposed on its plane surface, each said spaced conductive portions being configured such that any two perpendicular lines dividing such portion into quadrants are of substantially equal length, and

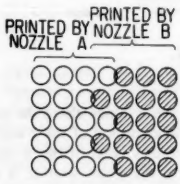
means mounting each of said boards spaced substantially uniformly a predetermined distance from its reflected sidewall.

4,272,771

INK JET PRINTER WITH MULTIPLE NOZZLE PRINT HEAD AND INTERLACING OR DITHER MEANS

Tatsuya Furukawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 75,999
Claims priority, application Japan, Sep. 25, 1978, 53-116495
Int. Cl.[3] G01D 15/18
U.S. Cl. 346—75 6 Claims



1. An ink-jet printer comprising:

an ink-jet print head having a plurality of nozzles arranged for printing dots in a coordinate array of rows and columns, each nozzle having an ink drop charging electrode and a pair of ink drop deflection electrodes;

means for providing relative motion between said head and a recording medium to cause said head to scan said medium in horizontal and vertical directions to print a pattern comprising groups of adjacent dot arrays, each dot array comprising a plurality of dots, with one dot array corresponding to each nozzle of said print head, the boundaries between adjacent dot arrays being defined by a first outermost line of dots of one dot array and an oppositely disposed parallel second line of dots of another dot array;

digital control means for sequentially enabling said nozzles to print said dot arrays; and

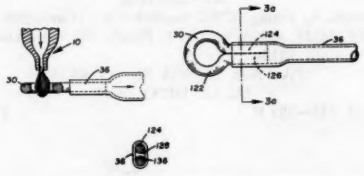
stagger circuit control means operatively associated with said digital control means for varying the positions of selected portions of said first and second lines of dots to cause only some dots of the first line to be deflected toward the second line, and only some dots of the second line to be deflected toward other dots of the first line, while enabling said digital control means to generate only the dots of said lines which are so deflected.

4,272,772

PRIMING APPARATUS FOR LIQUID INK WRITING INSTRUMENTS

Ronald J. Geil, Vermilion, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 859,902, Dec. 12, 1977, Pat. No. 4,170,106.
This application Jun. 27, 1979, Ser. No. 52,453
Int. Cl.[3] G01D 15/18
U.S. Cl. 346—140 R 1 Claim



1. An improved charging and priming ring for an ink jet printer, comprising:

an element of electrically conductive material formed into a loop having essentially radially outwardly extending ends, pairs of said ends being held in laterally spaced relation to define a flow channel therebetween;

conduit means surround each pair of said ends to restrain them, said laterally spaced ends and said conduit means defining an orifice means wherein a drop of liquid passing through said element is drawn away when a vacuum is applied to said orifice means.

4,272,773

INK SUPPLY AND FILTER FOR INK JET PRINTING SYSTEMS

Laszlo Halasz, Brecksville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 24, 1979, Ser. No. 42,189
Int. Cl.[3] G01D 15/16, 15/18
U.S. Cl. 346—140 R 6 Claims

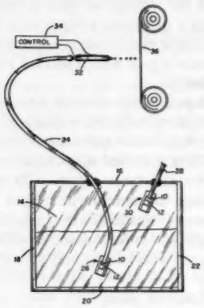
1. An improved ink supply container for use in ink jet printing systems, comprising:

a sealed collapsible container;

at least one ink delivery conduit extending through a wall of said container, said conduit having an inlet end located in said container;

a conduit segment having a bore sized to receive said inlet end; and

a filter element located within said bore, said element comprising a cylinder of compressed fibers forming a plurality



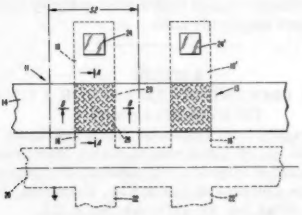
of substantially parallel passages through which capillary flow is achievable.

4,272,774

SELF-ALIGNED FLOATING GATE MEMORY CELL AND METHOD OF MANUFACTURE

Charles E. Boettcher, Sandy, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 19, 1979, Ser. No. 59,235
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **10 Claims**



1. A floating gate memory cell comprising:
a semiconductor substrate of one conductivity type,
source and drain surface regions on said substrate of the opposite conductivity type and a channel region connecting said surface regions,
a conductive floating gate insulated from, overlying and substantially coextensive with said channel region in the direction transverse to the source-to-drain direction and insulated from said channel region,
a conductive control gate overlying and insulated from said floating gate and coextensive with said floating gate in the source-to-drain direction.

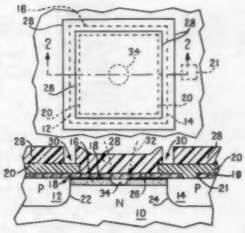
4,272,775

LASER TRIM PROTECTION PROCESS AND STRUCTURE

James B. Compton, Los Gatos; Robert A. Cometta, San Jose, and Daniel D. Culmer, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 921,743, Jul. 3, 1978, Pat. No. 4,179,310. This application Jun. 4, 1979, Ser. No. 45,323
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—29 **9 Claims**

1. An integrated circuit structure, which comprises:
(a) a semiconductor substrate of a first conductivity type,
(b) a first region of second conductivity type in said semiconductor substrate and forming a P-N junction therewith,
(c) a second region contiguous with said first region and including a circuit element to be trimmed by use of a radiant energy beam,
(d) a first oxide on said semiconductor substrate overlying said second region including said circuit element,



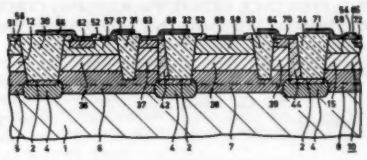
(e) a layer of a metal reflective to the radiant energy beam on said first oxide at least the P-N junction formed between said first region and said semiconductor substrate, and
(f) a second oxide layer on said reflective metal layer, said second oxide layer having an opening which exposes said reflective metal layer over the P-N junction at the surface of said semiconductor substrate where said P-N junction is contiguous with said second region.

4,272,776

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Bernard H. Weijland, Nijmegen, and Wilhelmus H. C. G. Verkuijlen, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 18, 1972, Ser. No. 254,604
Claims priority, application Netherlands, May 22, 1971, 7107039
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—50 **32 Claims**

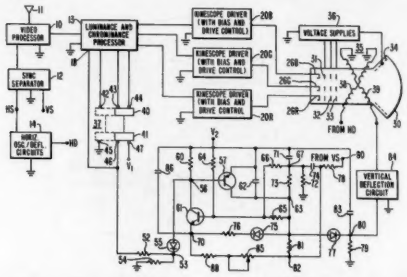


1. A semiconductor device comprising a body, said body comprising a monocrystalline substrate, at least a first layer consisting of silicon semiconducor material on a surface of said substrate, at least part of said first layer being monocrystalline, a second layer of insulating material located at only part of the said substrate surface and buried within the body, the buried second layer consisting at least partly of silicon nitride, and means forming an isolation zone for isolating part of the first semiconductor layer which is monocrystalline from another part of the semiconductor layer, said isolation zone comprising at least partly a third layer of insulating material inset in the first semiconductor layer from its surface and extending down to and at least partly adjoining the second insulating layer, said third layer consisting of silicon oxide formed by in situ conversion of the semiconductor material of the first semiconductor layer, the lateral extent of the second layer being different from the lateral extent of the third layer where it adjoins the second layer.

4,272,777
SERVICE SWITCH APPARATUS

William V. Fitzgerald, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,965
Int. Cl.[3] H04N 9/62
U.S. Cl. 358—10 3 Claims



1. In a television receiver including a vertical oscillator for providing a signal to a vertical deflection circuit, service switch apparatus comprising:

a service switch, incorporating an electrical contact, said switch being adjustable between a first and a second position, said first position defining a condition in which a first potential is applied to said contact, said second position defining a condition in which a second potential, different than said first potential, is applied to said contact;

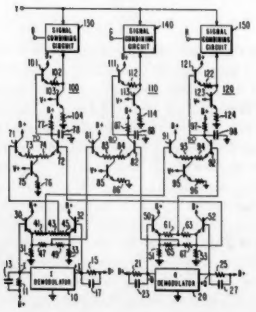
a diode;

means for coupling said diode between a point in said oscillator and said contact with such polarity that application of said first potential to said contact effects a forward biasing of said diode to cause conduction by said diode, said conduction effecting a disabling of said oscillator, whereas application of said second potential to said contact effects a reverse biasing of said diode, permitting normal operation of said vertical oscillator and decoupling said oscillator point from said contact.

4,272,778
COLOR-DIFFERENCE SIGNAL PROCESSING CIRCUITS

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,783
Int. Cl.[3] H04N 9/50, 9/52
U.S. Cl. 358—23 10 Claims



1. In a color television receiver, apparatus comprising, in combination:

a first push-pull color demodulator having first and second output terminals, the voltage at said first output terminal varying about a quiescent voltage of a first magnitude in representation of a first color-difference signal with a first polarity, and the voltage at said second output terminal varying about a quiescent voltage of a magnitude closely matching said first magnitude in representation of said first color-difference signal with a second polarity opposite to said first polarity;

a second push-pull color demodulator having third and fourth output terminals, the voltage at said third output terminal varying about a quiescent voltage of a magnitude closely matching said first magnitude in representation of a second color-difference signal with said first polarity, and the voltage at said fourth output terminal varying about a quiescent voltage of a magnitude closely matching said first magnitude in representation of said second color-difference signal with said second polarity opposite to said first polarity;

a first resistive current path;

means for direct current conductively connecting said first resistive current path between said first and second output terminals;

a second resistive current path;

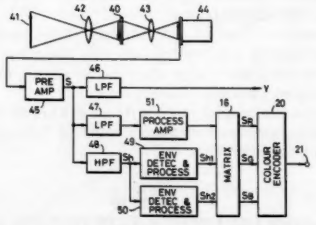
means for direct current conductively connecting said second resistive current path between said third and fourth output terminals; and

means, direct current conductively coupled to an asymmetrically positioned intermediate point of said first resistive current path and to an asymmetrically positioned intermediate point of said second resistive current path and responsive to the respective voltages appearing at said intermediate points, for forming a third color-difference signal representative of a combination of said first and second color difference signals with a given polarity relationship and a given magnitude ratio.

4,272,779
SIGNAL PROCESSING CIRCUIT FOR A COLOR TELEVISION CAMERA

Shintaro Nakagaki; Itsuo Takanashi; Sumio Yokokawa; Tadayoshi Miyoshi, all of Yokohama; Koichiro Motoyama, Ninomiya, and Kenichi Miyazaki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 19, 1979, Ser. No. 4,721
Claims priority, application Japan, Jan. 20, 1978, 53-5168[U]; Feb. 16, 1978, 53-15953
Int. Cl.[3] H04N 9/04
U.S. Cl. 358—47 16 Claims



1. A signal processing circuit for a color television camera having a camera tube which generates a multiplex output signal comprising a direct wave signal and a plurality of amplitude-modulated signals, said circuit comprising:

filter means responsive to an output signal of the camera tube for individually separating a direct wave signal from a plurality of amplitude-modulated signals;

a plurality of detection and processing means corresponding to each of the separated amplitude-modulated signals, each of the plurality of detection and processing means

comprising detection means for detecting its corresponding separated amplitude-modulated signal to produce a detected signal having restored DC components, and gamma correction means for gamma-correcting the detected signal;

processing circuit means comprising gamma correction means for gamma-correcting the separated direct wave signal;

matrix means for matrixing the output signals of said plurality of detection and processing means and said processing circuit to obtain three primary color signals; and

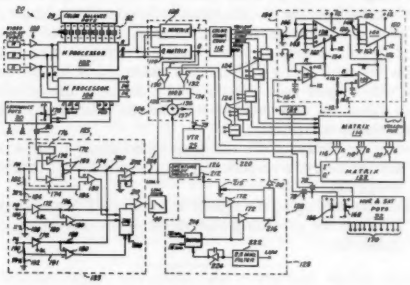
color encoding means for producing a composite color video signal from the output three primary color signals of said matrix means.

4,272,780

FILM SCANNER WITH VARIABLE RATE IMAGE ENHANCEMENT

Armand Belmares-Sarabia, St. James, N.Y.; Stanley J. Chayka, Parsippany, N.J., and Robert M. Lund, New York, N.Y., assignors to Teletronics International, Inc., New York, N.Y.

Division of Ser. No. 700,852, Jun. 29, 1976, Pat. No. 4,096,523.
This application Jun. 9, 1978, Ser. No. 914,575
Int. Cl.[2] H04N 5/30
U.S. Cl. 358—54 **5 Claims**



1. In a system for converting photographic images to video signals, said system including projector means for presenting and projecting images sequentially at a variable rate, video camera means for converting said images into video signals, aperture delay means for producing contours signals for image enhancement, the improvement of rate-responsive variable enhancement means for amplifying said contours signals in an amount which is a direct function of the rate of presentation of said images by said projector means.

5. A device as in claim **1** in which said video camera means includes luminance signal generating means, said aperture delay means being connected to receive said luminance signal, chrominance signal means, and means for adding the output of said variable enhancement means to said chrominance signal to produce a composite video signal.

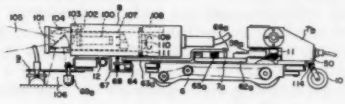
4,272,781

NONDESTRUCTIVE EXAMINING APPARATUS

Nobuo Taguchi, Fuchu; Tadashi Munakata, Tokyo, and Yoshikata Kobayashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1979, Ser. No. 72,592
Claims priority, application Japan, Sep. 8, 1978, 53-109594; Jan. 17, 1979, 54-3660[U]
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—100 **9 Claims**

1. A nondestructive examining apparatus comprising a carriage capable of running along a surface to be examined; an industrial television camera, a profile sensor for profiling the contour of a surface to be examined, and a nondestructive examining unit which are mounted on an arm supported on said carriage; control means for controlling said carriage, said industrial television camera, said profile sensor, and said nondestructive examining unit; and, recording means for recording data produced by said nondestructive examining unit as a result



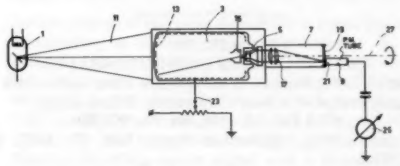
of operation thereof and video images produced by said television camera.

4,272,782

METHOD OF AND APPARATUS FOR ADJUSTING AN IMAGE INTENSIFIER CHAIN

Johannes Proper; Jacob Schuur; George L. A. Monte, and Eduard P. Westerveld, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1977, Ser. No. 757,296
Claims priority, application Netherlands, Jan. 8, 1976, 7600142
Int. Cl.[3] H04N 5/32; H01J 31/49, 23/08; H04N 5/21
U.S. Cl. 358—111 **22 Claims**



1. A method of adjusting an image intensifier to obtain an optimum adjustment at least of a focussing voltage applied to the image intensifier comprising the steps of exposing the input screen of the image intensifier to input radiation, converting light originating from at least a portion of the output screen of the image intensifier into a first electrical signal, sensing the difference between said first signal and a reference value and adjusting said focussing voltage until said difference attains an extreme value.

4,272,783

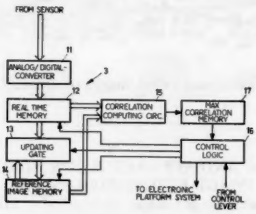
CORRELATION FOLLOWER FOR TRACKING AN OBJECT

Lars-Ake Warnstam; Rune Jonsson, and Georg Ludvigsson, Linköping, all of Sweden, assignors to Saab-Scania AB, Linköping, Sweden

PCT No. PCT/SE78/00067, § 371 Date Jul. 2, 1979, § 102(e) Date Jun. 29, 1979, PCT Pub No. WO79/00260, PCT Pub. Date May 17, 1979
This PCT application filed Jun. 29, 1979, Ser. No. 127,211
Claims priority, application Sweden, Nov. 2, 1977, 7712352
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—126 **5 Claims**

1. A video correlator for causing an object to be tracked by an image sensor that has a limited field of view and is arranged to cyclically scan said field of view and produce a video signal corresponding thereto, said video correlator comprising a first addressable memory and means for charging the same with digital-form information for each scanning cycle obtained from said video signal and corresponding to a section of said field of view, a second addressable memory and means for initially charging thereinto digital-form image information corresponding to the portion of said section that is to be kept centered in the field of view, means comprising correlation computing means for determining the portion of the information in the first memory that most nearly correlates with said image information and for producing an error signal which corresponds to shift in the location of said portion from cycle to cycle and

which is employed for controlling alignment of said sensor with the object, and updating means for automatically updating image information in the second memory from information in the first memory, said video correlator being characterized by:



said updating means comprising address means arranged to address, during any one scanning cycle, discrete positions in said second memory that correspond to spaced apart parts of the image to which the information in said second memory corresponds, so that in any one scanning cycle said second memory is updated only partially and at positions that are distributed over the area of said image.

4,272,784

CHANNEL PROGRAMING APPARATUS

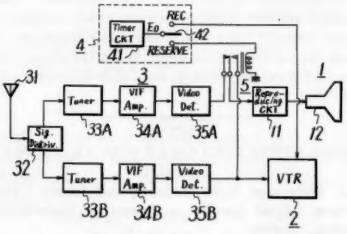
Takahiko Saito, Kamakura, and Masaru Sato, Asaka, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,536

Claims priority, application Japan, Dec. 27, 1977, 52-179139[U]

Int. Cl.[3] **H04N** *5/78*

U.S. Cl. 358—127 **7 Claims**



1. Channel programing apparatus, capable of supplying a video display means and a video recording means which is selectively settable to one of several modes including a recording mode, each with an individual tuned video signal, comprising:

means defining first and second video outputs for supplying signals to said video display means and said video recording means, respectively;

first and second tuner means providing first and second tuned signals, respectively;

means for applying said second tuned signal to said second video output;

tuner switching means for selectively applying one of said first and said second tuned signals to said first video output;

timing means having an unset state and being changeable to a set state in which said tuning means produces a timed command at a selected time, said timing means including mode switching means for selectively establishing a record command mode and a reserve command mode;

means for causing said tuner switching means to switch over so as to apply said second tuned signal to said first video output in response to said timed command, and which is rendered inoperative in said record command mode; and

means for causing said video recording means to be set to said recording mode thereof in response to said timed command when said mode switching means has established said record command mode.

4,272,785

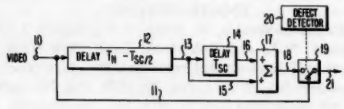
DEFECT COMPENSATION FOR COLOR TELEVISION

Jack S. Fuhrer, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,364

Int. Cl.[3] **H04N** *5/76, 9/535, 5/78, 5/795*

U.S. Cl. 358—127 **5 Claims**



5. An improved system for playback of a record of successive images including pickup means for recovering a real-time video signal from the record, signal defect detection means and a source of video signal recovered from said record and delayed by one image line relative to said real-time signal; and means for substituting said delayed video signal for the real-time video signal upon detection of a defect in the real-time video signal, the improvement wherein said source of delayed video signals comprises:

means for delaying the real-time video signal by first and second intervals respectively shorter and longer than one image line;

means for averaging the signals delayed said first and second intervals for providing said video signal delayed by one image line.

4,272,786

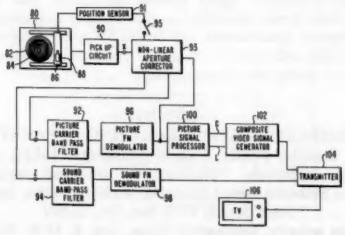
VIDEO DISC PLAYBACK APPARATUS WITH NON-LINEAR APERTURE CORRECTION

John J. Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 951,382, Oct. 16, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 75,330

Int. Cl.[3] **H04N** *5/76, 5/78*

U.S. Cl. 358—128.5 **18 Claims**



1. In a disc record player for information recovery of video and sound signals, an apparatus comprising:

means for recovering modulated information signals having different components including composite color video signals with sound accompaniment from a disc record, said recovery means having a non-linear response which produces intermodulation distortions between said different components of the modulated information signals;

a non-linear compensating means, coupled to said recovery

means, for reducing said intermodulation distortions resulting from the non-linear response of the recovery means, in the recovered signals;

means, coupled to said compensating means, for demodulating the information signals; and

means, coupled to said demodulating means, for processing said demodulated signals.

4,272,787

T.V. PICTURE FREEZE SYSTEM

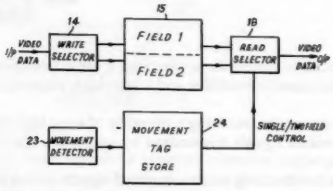
Peter C. Michael, Newbury; Richard J. Taylor, London, and Paul R. N. Kellar, Newbury, all of England, assignors to Micro Consultants Limited, Berkshire, England

Filed Aug. 16, 1979, Ser. No. 67,496

Claims priority, application United Kingdom, Sep. 7, 1978, 35988/78

Int. Cl.³ H04N *5/22*

U.S. Cl. 358—160 **9 Claims**



1. A picture freeze system comprising:

frame storage means for storing picture information from first and second fields of a television picture;

movement detector means for detecting on a picture point by picture point basis any picture movement from the information on a predetermined portion of the picture;

movement data storage means for storing data indicative of any movement detected picture point by picture point; and

selector means for selectively outputting stored picture information picture point by picture point from a single or both fields in dependence on the stored movement data to provide information from both fields during parts of the picture where no movement has been detected and from only a single field from parts of the picture where movement has occurred.

4,272,788

RECEIVER FOR TELEVISION SOUND MULTIPLEX BROADCASTING AND FM STEREO MULTIPLEX BROADCASTING

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 12, 1979, Ser. No. 84,366

Claims priority, application Japan, Oct. 19, 1978, 53-128904

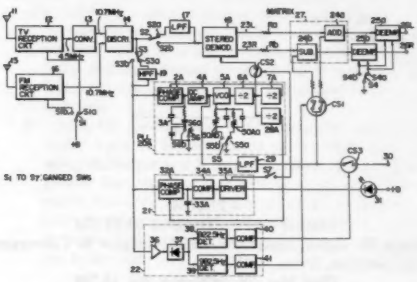
Int. Cl.³ H04N *5/46*

U.S. Cl. 358—189 **8 Claims**

1. A receiver for selectively receiving either a television sound multiplex broadcasting in which a main carrier is frequency-modulated by a television sound multiplex composite signal including a main channel signal of a first audio signal and a subchannel signal formed by frequency-modulating a subcarrier with a second audio signal, or an FM stereo multiplex broadcasting in which a main carrier is frequency-modulated by an FM stereo multiplex composite signal including a main channel signal which is the sum of left and right channel audio signals, a subchannel signal formed by suppressed-carrier amplitude-modulating a subcarrier with the difference between the left and right channel audio signals and a pilot signal having a frequency half the frequency of the subcarrier, said receiver comprising:

frequency discriminator means for recovering the television sound multiplex composite signal during the reception of the television sound multiplex broadcasting and the FM stereo multiplex composite signal during the reception of the FM stereo multiplex broadcasting;

PLL circuit means coupled with said frequency discriminator means and including a voltage-controlled oscillator, and circuit means connected to said oscillator for selectively setting the self-running frequency of said oscillator to a frequency corresponding to the frequency of the subcarrier in the television sound multiplex broadcasting



for the purpose of receiving the television sound multiplex broadcasting or a frequency corresponding to the frequency of the pilot signal in the FM stereo multiplex broadcasting for the purpose of receiving the FM stereo multiplex broadcasting, whereby said PLL circuit means FM-demodulates the subchannel signal during the reception of the television sound multiplex broadcasting and forms a switching carrier signal with a frequency two times the frequency of the pilot signal during the reception of the FM stereo multiplex broadcasting.

4,272,789

PULSE-FORMING CIRCUIT FOR ON/OFF CONVERSION OF AN IMAGE ANALYSIS SIGNAL

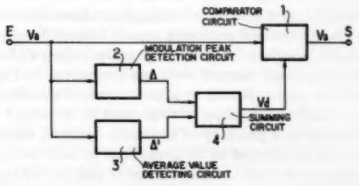
Gerard Biron, Cressely, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 30, 1979, Ser. No. 70,760

Claims priority, application France, Sep. 21, 1978, 78 27070

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—282 **8 Claims**



1. A pulse-forming circuit for on/off conversion of an image analysis signal representative of successive image points along successive image scan lines, the signal being modulated such that its level varies between two limit levels corresponding to image white and to image black, the pulse-forming circuit converting the image analysis signal to an on/off signal by comparing the said imge analysis signal with a decision threshold, and the decision threshold being variable as a function of the level of the image analysis signal, wherein the pulse-forming circuit comprises an image background level detector circuit connected to receive the image analysis signal and to operate over a scan line to detect the level Δ of the image background, an average value detector circuit connected to

receive the image analysis signal and to operate over a few successive image points to detect the average value Δ' thereof and a circuit for determining the said variable decision threshold, connected to receive the background level Δ and the average value Δ' from the detector circuits and to provide the said decision threshold at a value V_d which satisfies a function having the form $V_d = K\Delta + K'\Delta'$, where K and K' are two coefficients which satisfy the following relationships:

$0 \leqq K < 1$;

$0 < K' < 1$; and

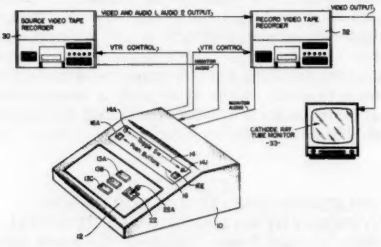
$0 < K + K' < 1$.

4,272,790

VIDEO TAPE EDITING SYSTEM

George W. Bates, Santa Ana, Calif., assignor to Convergence Corporation, Irvine, Calif.

Filed Mar. 26, 1979, Ser. No. 23,759
Int. Cl.³ H04N 5/78; G11B 15/46
U.S. Cl. 360—14 **5 Claims**



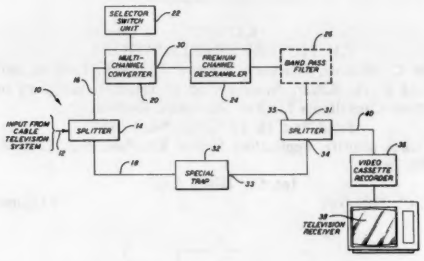
1. An editing control system for transferring selected video information from a video source to a record video tape recorder, said editing control system including: a plurality of solid state electronic circuit boards for controlling the transfer of video information from the source to the record video tape recorder; a microprocessor circuit board connected to said first-named circuit boards for cyclically and successively transmitting signals to and receiving signals from different ones of said circuit boards; a first control panel including a plurality of manually-operated control switches connected to respective ones of said circuit boards to activate control circuits thereon and to establish operating modes therein; a second control panel including a plurality of manually-operated remote controll switches adapted to be connected to said record video tape recorder to control the operation of said record video tape recorder; a third control panel including a plurality of manually-operated control switches connected to one of said circuit boards to establish selected operating modes in the editing control system, said third control panel further including manually-controllable potentiometer means connected to one of said circuit boards for effectuating forward and reverse motion of the record video tape recorder under manual control from a still-frame position and at a speed determined by the setting of the potentiometer means on either side of a neutral position, and a manually-operated cruise switch connected to one of said circuit boards to cause the record video tape recorder to be driven at a speed selected by said potentiometer means independent of subsequent settings of said potentiometer means.

4,272,791

METHOD AND APPARATUS FOR VIDEO RECORDING

Jerome C. Rifken, 304 Edwards Dr., Fayetteville, N.Y. 13066

Filed Mar. 26, 1979, Ser. No. 24,103
Int. Cl.³ H04N 5/78, 7/10
U.S. Cl. 360—33 **5 Claims**



1. A control system for connecting a cable television system to a video cassette recorder and a television receiver comprising:

input means for receiving a plurality of very high frequency television signals transmitted by said cable television system;

means for directing said transmitted signals through first and second conduits defining respectively first and second signal flow paths;

a multi-channel converter provided in said first flow path including selector means for selecting a single very high frequency signal from the plurality of very high frequency signals transmitted by said cable television system and for converting said single signal to a preselected converter very high frequency output signal;

trap means including an output provided in said second flow path for eliminating said preselected converter output signal from the very high frequency signals transmitted by said cable television system;

means connected to said first and second conduits for combining said preselected converter output signal and the very high frequency signals transmitted from the output of said trap means;

a video cassette recorder connected to an output of said combining means for receiving said combined signals whereat any very high frequency signal comprised within the cable television system transmitted signals may be recorded; and

a television receiver connected to the output of said combining means for receiving said combined signal whereat any signal comprised within the cable television system transmitted signals may be viewed.

4,272,792

MODE CHANGING SYSTEM FOR A CASSETTE TAPE RECORDER

Niro Nakamichi, Higashikurume; Kozo Kobayashi, Kodaira, and Hideo Kawachi, Ichikawa, all of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

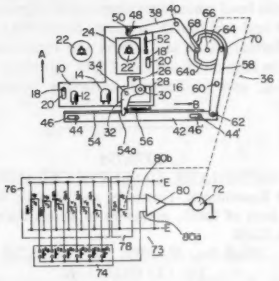
Filed Jun. 25, 1979, Ser. No. 52,020
Claims priority, application Japan, Jun. 28, 1978, 53-78170
Int. Cl.³ G11B 15/18, 19/02
U.S. Cl. 360—69 **6 Claims**

1. A mode changing system for a cassette tape recorder wherein operating members such as a head base plate and a pinch roller are moved in accordance with operating modes of said cassette tape recorder comprising:

control means to control movement of the operating members to take a position corresponding to a selected mode of said cassette tape recorder;

a control electric motor to actuate said control means;

a mode selective switch group to select one of said modes;
a reference signal generating circuit to generate a reference signal corresponding to the selected one of said modes in accordance with the selection of said modes by means of said mode selective switch group;
a variable signal generating circuit to generate a variable signal which continuously varies with the rotation of said control electric motor; and
an operational circuit to receive said reference signal at one of its inputs and said variable signal at the other input to



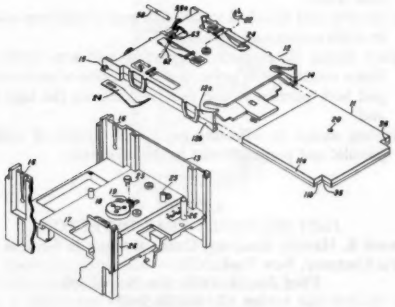
compare said signals to generate a control output so as to rotate said control electric motor, said operational circuit being associated with said control means and said variable signal generating circuit so that said control output is generated for rotating said control electric motor when said operating members are at a position different from the position corresponding to the selected mode and for stopping said control electric motor when said operating members reach the position corresponding to the selected mode.

4,272,793

SYSTEM AND METHOD FOR POSITIONING A MAGNETIC HEAD TRANSDUCER ON A FLEXIBLE STORAGE MEDIA

Richard D. Van Landingham, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,153
Int. Cl.[3] G11B *21/10, 5/55, 23/02*
U.S. Cl. 360—78 **14 Claims**



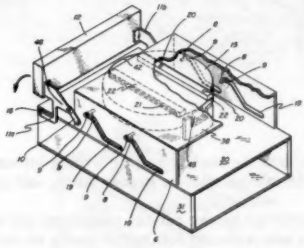
1. A system for recording information on a plurality of recording tracks on a recording surface of a sheet of information storage media, said system comprising:
(a) a cartridge containing said sheet of information storage media, said cartridge having first and second openings therein, said first opening for providing access to said media for providing rotational motion thereto, said second opening for providing access to said media for writing and/or reading information thereon;
(b) rotational means extending through said first opening for engaging said media and imparting rotational motion thereto; and
(c) means for recording and/or writing information on a selected track of said media, said media including:
(i) a magnetic head transducer disposed in registration with said second opening for reading and/or writing information on said selected track; and
(ii) means for positioning said head transducer on said selected track, said positioning means including:
a. means for determining the total number of tracks between the present track location of said head transducer and said selected track and the direction of said selected track with respect to said present track location, and
b. means for moving said head transducer to said selected track in M increments of N tracks each, M being an integer and N being a predetermined integer greater than one, and thereafter in single track increments when the total number of tracks is equal to or exceeds (M+1)·N, said head transducer being moved in single track increments only when said total number is less than 2·N.

4,272,794

DISC MEMORY DRIVE WITH IMPROVED CARTRIDGE HANDLING

Loren D. Skarky, Bethany, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Oct. 10, 1978, Ser. No. 949,845
Int. Cl.[2] G11B *17/04, 23/02*
U.S. Cl. 360—97 **12 Claims**



1. A disk drive unit mechanism for loading on and unloading from the drive spindle of said disk drive unit, a disk memory module of the type having a housing with a support feature, and on its bottom an exposed disk hub with a spindle attachment feature, comprising
(a) a base supporting the spindle;
(b) a panel mounted on the base and spaced apart from the spindle, and having on a vertical face thereof a loading port large enough to pass the module;
(c) a door not substantially smaller than the loading port;
(d) hinge means fastening the door to the base adjacent the loading port for allowing said door to pivot from a position closing the loading port to an open position allowing the module to enter the loading port;
(e) a module support means mating with the housing's support feature and suspending the housing thereby;
(f) transport means for conveying the module support from a first position adjacent the loading port which allows the module to be passed through the loading port to be mated by its support feature to the module support, to a second position placing the disk hub adjacent the spindle and allowing the disk hub to be mated by its spindle attachment feature to the spindle,
said transport means comprising

(i) a pair of vertical plates attached to the module support means substantially parallel to each other, and spaced apart from each other on opposite sides of the spindle, each of the plates having a pair of slots, each slot having a substantially horizontal part and a diagonal part slanting upward therefrom toward the loading port, and

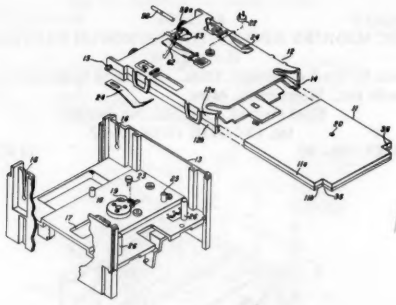
(ii) four projections fixed to the base one projection engaging each slot to guide the module support between its first and second positions; and

(g) linkage means operatively attached between the door and the module for shifting the module support bidirectionally between its first and second positions respectively as the door is opened and closed.

4,272,795
INFORMATION STORAGE SYSTEM AND RECORDING CARTRIDGE HAVING PRECISE ALIGNMENT FEATURES

Max G. Davis, Jr., Plano, and Charles M. Mueller, Forney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,477
Int. Cl.[3] G11B *3/62, 5/016, 23/02*
U.S. Cl. 360—99 **18 Claims**



1. A system for reading and/or writing information on a sheet of flexible information storage media, said system comprising:

(a) a cartridge having parallel planar top and bottom surfaces, side walls and end walls forming an internal chamber wherein said media is disposed, said bottom surface having:

(i) a pair of elongated slots extending inwardly from opposite side walls;

(ii) a recess extending inwardly from an end wall, said end wall being substantially orthogonal to said opposite side walls; and

(iii) first and second openings, said first opening being centrally located for providing access to said media to impart rotational motion thereto, said second opening for providing access to said media for reading and/or writing information thereon;

(b) a cartridge holder having a receptacle for retaining said cartridge in a predetermined position therein, said receptacle being defined by top and bottom major interior surfaces, interior side walls, an interior end wall and an open end through which said cartridge is inserted into and removed from said holder, said holder including:

(i) a pair of elongated projection members extending inwardly from opposite interior side walls along said interior bottom surface for mating with respective slots in said bottom surface of said cartridge and retaining said catridge in said predetermined position;

(ii) an extension member extending inwardly from said interior end wall for mating with said recess in said cartridge and retaining said cartridge in said predetermined position and

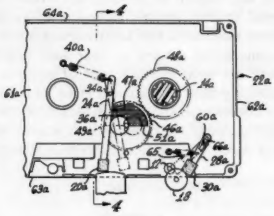
(iii) third and fourth openings extending through said interior bottom surface, said third and fourth openings being in registration with said first and second openings, respectively, in said bottom surface of said cartridge when said projection members are in mating engagement with respective elongated slots and said extension member is in mating engagement with said recess; and

(c) a base member for supporting said holder in said cartridge in a fixed position, said base member having a magnetic head transducer disposed in alignment with said second and said fourth openings for reading and/or writing information on said media and rotational means disposed in alignment with said first and third openings for engaging said media and imparting rotational motion thereto.

4,272,796
AUTOMATIC CASSETTE CLEANER

Rudolf Van Kreuningen, Torrance, and Dan O. Ray, Rowland Heights, both of Calif., assignors to Kraco Enterprises, Inc., Compton, Calif.

Filed Jun. 29, 1979, Ser. No. 53,299
Int. Cl.[3] G11B *5/41*
U.S. Cl. 360—128 **7 Claims**



1. For use with a cassette tape deck which moves recording tape in a standard cassette in a path adjacent to and past a play and/or record tape head, an apparatus for cleaning the tape head utilizing power from the tape transport means of the cassette tape deck, comprising:

a frame;

an arm having a first end terminating nearly adjacent to the tape head;

a cleaning pad attached to said first end of said arm adapted to wipe across said tape head;

pivot means for pivotally supporting said arm within said frame about a pivot point to allow motion of said cleaning pad both parallel to and perpendicular to the tape path; and

driving means for effecting reciprocal motion of said arm parallel and perpendicular to the tape path.

4,272,797
FAST RECOVERY PEAK DETECTOR

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

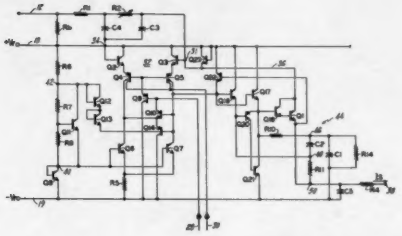
Filed Jul. 31, 1979, Ser. No. 62,460
Int. Cl.[3] H02H *3/08*
U.S. Cl. 361—93 **10 Claims**

1. In a circuit breaker static trip unit having at least one current transformer for developing a secondary winding current proportional to a distribution circuit phase current flowing in its primary, a rectifier for rectifying the secondary current, a burden resistor and a power supply connected in series across the outputs of the rectifier for developing an undulating DC signal voltage across the burden resistor referenced to a

regulated DC supply voltage developed by the power supply;
a peak detector comprising, in combination:

A. a differential amplifier having a first input, a second input connected to one end of the burden resistor at its junction with the power supply to receive the regulated supply voltage, and an output;

B. a resistor connecting the other end of the burden resistor at its junction with one output of the rectifier to said first input of said amplifier; and



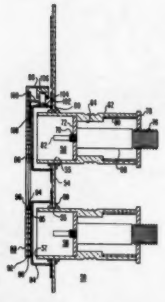
C. peak detecting means connected as a DC negative feedback network between said output and first input of said amplifier, said peak detecting means including a first capacitor and means responsive to the amplifier output voltage for charging said first capacitor to a voltage proportional to the peak amplitude of said output voltage, said first capacitor voltage producing a DC current signal at a peak detector output terminal which is equal to the signal voltage peak amplitude divided by the resistance of said resistor.

4,272,798

COMPOSITE GROUNDABLE BARRIER FOR SWITCHGEAR AND GROUNDING APPARATUS

Carl R. Merola, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1979, Ser. No. 88,307
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—345 **16 Claims**



1. Electrical apparatus, comprising:

(a) electrically grounded support means;

(b) a stationary electrical contact means disposed on said support means in a disposition to be contacted only from a point within a limited three-dimensional angular range;

(c) movable electrical contact means for being selectively disposed in a disposition of engagement with said stationary contact means or not, said engagement coming from a point within said range;

(d) movable composite barrier means movably disposed upon said support means for being actuated to a first position to insulate said stationary contact means from any point within said range when said movable contact means is not in a disposition of engagement therewith, and for being actuated to a second position to allow said engagement of said stationary contact means with said movable contact means, said composite barrier means comprising electrically insulating material for that portion thereof which is closest to said stationary contact means when said barrier means is in said first position and electrically conducting material which is spaced from said stationary contact means by said insulating material, said electrically conducting material having a contact thereon for being grounded when said barrier means is in said first position to thus interpose the electrical potential of ground between said stationary contact means and any point in said range, said electrically conducting material being ungrounded when said barrier means is in said second position to thus reduce the tendency to interact electrically with said engaged stationary contact means and said movable contact means;

(e) actuating means for moving said barrier means; and

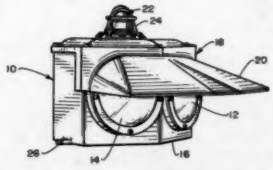
(f) grounding means including an electrical conductor and an actuating-means-actuated contact means for connecting said support means to said conductor at a time which is generally concurrent with said contact on said barrier means being connected to said conductor for thus grounding said conducting material when said barrier means is in said first position, said latter two separate connections both being disconnected when said barrier means is in said second position.

4,272,799

SURFACE FLOODLIGHT ASSEMBLY

James R. Downing, 10218 Donna Ave., Northridge, Calif. 91324

Filed Jan. 29, 1979, Ser. No. 7,073
Int. Cl.³ F21L *11/00*; F21V *1/00, 7/02*
U.S. Cl. 362—145 **12 Claims**



1. A surface lighting assembly for non-glare illumination of helicopter landing pads comprising;

a housing;

mounting means for mounting said housing around the peripheral surface of said landing pad;

cover means for covering said housing;

omnidirectional light means on said housing for providing a perimeter marking light;

a pair of adjacent faces in said housing angled backward with respect to one another;

a pair of floodlights mounted in said adjacent faces; the angle of said adjacent faces being such that the respective axes of said floodlights are at approximately 40° to one another;

said pair of floodlights selected to cooperate to produce a beam of maximum illumination over a horizontal beam width of approximately 90°; and

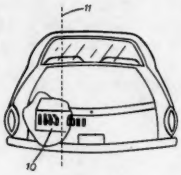
limiting means for limiting the maximum vertical divergence of light to approximately less than about 10° whereby maximum illumination is provided over the surface area of a helicopter pad with a minimum direct glare to the helicopter pilot.

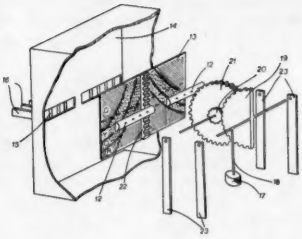
4,272,800

SAFE-SPEED INDICATOR SYSTEM

Rolin K. Asatourian, 20231 Brightwood Ct., Yorba Linda, Calif. 92686

Filed Sep. 1, 1978, Ser. No. 938,816
Int. Cl.[3] F21V *13/00*; B60Q *1/00*
U.S. Cl. 362—242 6 Claims





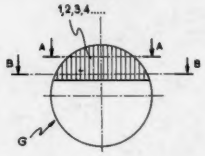
1. A light projector comprising a housing, a plurality of white light sources; a transparency means located in front of the said light sources to selectively pass through different colors of the white light radiating from the said light sources; a color selector means having windows through which only a selected set of colors of the said transparency means can be observed; a plurality of convergent lenses positioned at a focal distance from the said transparency means to produce parallel beams of light of the colors selectively uncovered by the said color selector means, said parallel beams being projected by the said plurality of lenses on left and right hand sides of the said projector at different converging projection angles, such that a beam projected from one such lens on one side intersects with each of the beams projected from other lenses on the other side of the said projector at predetermined distances thereof, the weight of the said transparency means being supported by a weight, through a spur-gear assembly, the said weight being suspended in a manner to allow for its swing when the said housing is decelerated or accelerated, the said swing of the said weight being translated through the said spur-gear assembly to a displacement of the said transparency means, resulting in uncovering of a new set of colors in the said transparency means and projection of each of the said new uncovered colors by one of the said lenses whose projection angle is different from the projection angle of the lens projecting the said color in fixed-speed motion of the said projector.

4,272,801

MOTOR VEHICLE HEAD LAMP LENSES HAVING LIGHT DEFLECTING RIBS

Hector Fratty, Boulogne, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jun. 1, 1979, Ser. No. 44,821
Claims priority, application France, Jun. 9, 1978, 78 17312
Int. Cl.[3] F21V *5/00*
U.S. Cl. 362—336 3 Claims



1. A lens for a motor vehicle headlight having a series of substantially vertical ribs,

each rib having a cross-sectional shape, in any selected horizontal plane, in the form of a circular arc,

the radius of curvature of the circular arc varying continuously along the length of each rib, and

the width of each rib being substantially constant along its length,

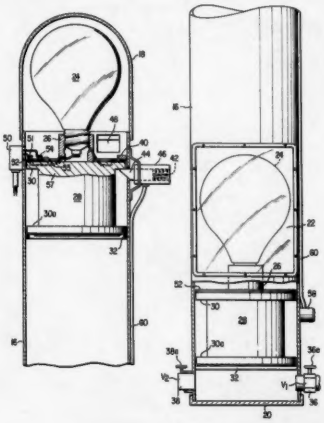
whereby the lateral spread of rays of light passing through the lens varies continuously from one end of each rib to the other and the series of ribs together produces a vertical displacement of the light passing through the lens.

4,272,802

TOWER LIGHT SYSTEM

Rufus P. Steadman, Rte. 2, Box 249, Middleton, Tenn. 38052

Filed Jan. 23, 1979, Ser. No. 5,757
Int. Cl.[3] B60Q *1/06*
U.S. Cl. 362—385 9 Claims



1. In a composite assembly of an elevated tower or other elevated and stabilized structure carrying an energizable warning fixture, as a light or other signal, at the top portion thereof; the provision of an auxiliary assembly including a substantially sealed tubing arrangement along substantially the length of the elevated structure in supported association therewith, a carriage carrying the warning fixture and disposed within said tubing arrangement as a piston with a sliding friction fit therewith for movement along the length thereof from a lower

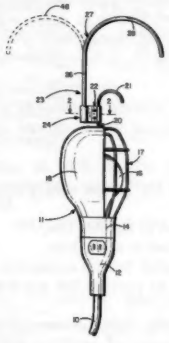
accessible position permitting replacement, repair of other servicing of the fixture, to an elevated upper position with the fixture in operative location relative to the elevated structure, force applying means reactive with the carriage for moving the carriage and included fixture from the lower position to the upper position and with permissive selective lowering thereof to the lower position, and means for effecting connection of the warning fixture to a source of energization therefor for operation of the warning fixture at the upper operative position thereof.

4,272,803

ADJUSTABLE TROUBLE LAMP SUPPORT

Alton L. Johnson, 1280 Eustis St., St. Paul, Minn. 55108

Filed Mar. 19, 1979, Ser. No. 21,509
Int. Cl.³ H01K *5/00*
U.S. Cl. 362—399 **12 Claims**



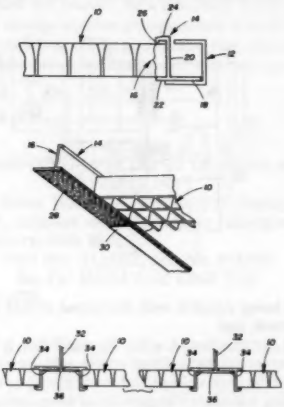
1. An adjustable trouble lamp comprising:
elongated electrical cord means;
handle means;
socket means secured to said handle means and to which said cord means is conductively connected, said socket means being for the purpose of conductively receiving a conventional bulb means;
conventional lamp guard cage means attached to said handle means for the protection of said bulb means;
a reflector surrounding part of the cage means for directing light from the bulb means in a particular direction;
an elongated rod member attached to said cage means on the end opposite said handle means and protruding a short distance therefrom;
a support comprising a hook including a curved section and a substantially straight shank section;
friction swivel means pivotally connected to the shank section of said hook; and
clamping bracket means fixedly attached to said friction swivel means and clamping said support to said elongated rod member,
the hook being sufficiently large that the transverse distance from the line of attachment of the support to said elongated rod member to the outermost periphery of the hook is larger than the transverse distance from said line of attachment to the outermost periphery of the trouble lamp cage at any angular position of the trouble lamp cage.

4,272,804

LIGHTING PANEL TRIM ELEMENT

Harold G. Blum, St. Charles, Mo., assignor to Koller Craft Plastic Products, Inc., Fenton, Mo.

Filed Mar. 19, 1979, Ser. No. 21,507
Int. Cl.³ F21V *17/04*
U.S. Cl. 362—408 **7 Claims**



1. Elongated one-piece plastic lighting panel trim elements for attachment to each of the outer marginal edges of a thick cellular lighting panel to facilitate mounting the lighting panel in a ceiling suspended lighting panel frame without routing the marginal edges of the lighting panel, said lighting panel trim elements being peripherally mounted on each outer marginal edge of the lighting panel, each lighting panel trim element having a throat section for receiving the top, side and bottom marginal edges of the thick cellular lighting panel, each lighting panel trim element also having a horizontal wall section integral and in direct line with the throat bottom wall section and extending outwardly from the lighting panel for mounting the lighting panel relative to the ceiling suspended lighting panel frame, and said lighting panel trim elements each also having a flexible top wall lip portion for securing the lighting panel within the throat sections of the lighting panel trim elements.

4,272,805

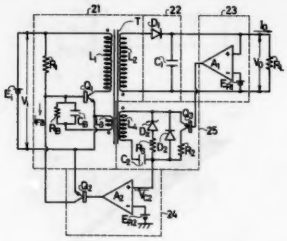
SWITCHING REGULATOR PROVIDED WITH CHARGE-DISCHARGE CIRCUIT HAVING OVERCURRENT PROTECTING FUNCTION AND SOFT-START FUNCTION

Yasuhide Iguchi, Tsurugashima, and Tsutomu Koike, Higashimatsuyama, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 66,428
Claims priority, application Japan, Aug. 25, 1978, 53-103595
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—19 **2 Claims**

1. A switching regulator comprising:
an oscillator circuit for chopping a DC voltage supplied from an input power source to thereby drive a transformer having at least a primary winding, secondary winding and at least one or more additional windings;
a rectifier circuit for rectifying an AC output voltage derived from said transformer;
an error amplifier circuit for comparing a DC output voltage derived from said rectifier circuit with a first reference voltage to thereby provide an output corresponding to the deviation of said DC output voltage from said first reference voltage;
a charge-discharge circuit including a capacitor connected

to one of said additional windings, said charge-discharge circuit being arranged so that said capacitor is charged with a voltage induced in said one additional winding in such a manner that the polarity of charges stored in said capacitor when the oscillation of said oscillator is in ON state, becomes opposite to the polarity of the charges stored in said capacitor when the oscillation is in OFF state, the discharge time constant of said charge-discharge



circuit being variable with the output of said error amplifier circuit; and

a control circuit adapted, when the oscillation is in ON state, for comparing the voltage across said capacitor with a second reference voltage and for applying to the base of a switching transistor a trigger signal for causing the oscillation operation to be switched from the ON state to the OFF state only when the voltage across the capacitor exceeds the second reference voltage.

4,272,806

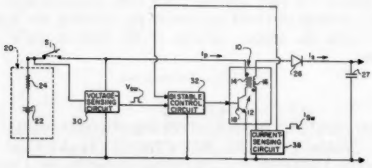
DC TO DC CONVERTER ADJUSTABLE DYNAMICALLY TO BATTERY CONDITION

Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1979, Ser. No. 47,530

Int. Cl.³ H05B *41/32;* H02M *3/335;* H02J *7/00*

U.S. Cl. 363—21 **6 Claims**



1. In a DC to DC converter adapted to be energized by a battery, the battery having a load voltage that varies directly as a function of its open-circuit voltage and inversely as a function of its internal resistance, said converter comprising a transformer including a first winding and a second winding, and a switch for interrupting battery current to said first winding to cause current to flow in said second winding, the improvement comprising:

(a) voltage-sensing means, coupled to the battery, for sensing (1) the battery open-circuit voltage when battery current to said first winding is interrupted, and (2) the battery load voltage when battery current flows to said first winding; and

(b) voltage-comparator means, coupled to said voltage-sensing means and said switch, for comparing the battery open-circuit voltage with the battery load voltage and for causing said switch to interrupt current in said first winding when the battery load voltage is less than a predetermined percentage of the battery open-circuit voltage, whereby the energy drawn from the battery when current flows to said first winding varies in direct proportion to the open-circuit voltage and in inverse proportion to the internal resistance of the battery.

4,272,807

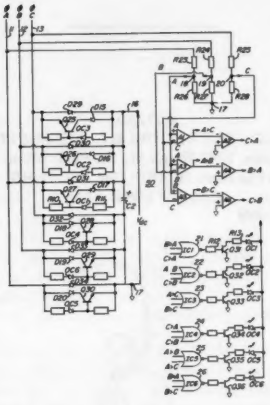
REGENERATIVE DC POWER SUPPLY

Gerard A. Gallagher, Pittsburgh, Pa., assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Jul. 20, 1979, Ser. No. 59,400

Int. Cl.³ H02M *7/06*

U.S. Cl. 363—126 **8 Claims**



1. A regenerative DC power supply operable from an AC line comprising:

an input connected to the AC line;

an output connected to a DC bus;

a plurality of rectifier devices connected between the input and the output to provide full wave rectification at the output;

a transistor switching circuit connected in anti-parallel with each of said plurality of rectifiers; and,

control means controlling each transistor switching circuit for conduction during an appropriate time period to conduct regenerative power from the DC bus to the AC line.

4,272,808

DIGITAL GRAPHICS GENERATION SYSTEM

William F. Hartwig, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 40,610

Int. Cl.³ G06F *3/153, 15/31*

U.S. Cl. 364—718 **6 Claims**

1. Signal generating means for generating signals corresponding to the x, y coordinates of a plurality of selected resolution points of an image displayed by said system, comprising:

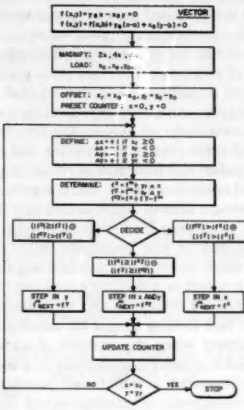
first means for storing the x, y coordinates of a current one of said selected resolution points;

second means coupled to said first means for performing the Taylor's expansion of the function corresponding to said image at said current resolution point and at a plurality of resolution points incrementally displaced from said current resolution point and determining a plurality of values, each of said values associated with a respective one of said plurality of incrementally displaced resolution points;

third means coupled to said second means for comparing said plurality of values to determine that value which has the smallest absolute magnitude;

fourth means coupled to said first and third means for incrementing or decrementing the x, y coordinates of said

current resolution point to establish the x, y coordinates of the next selected resolution point on said image, and next



resolution point corresponding to the incrementally displaced resolution point having the smallest magnitude determined by said third means.

4,272,809
CHANNEL DEVICE

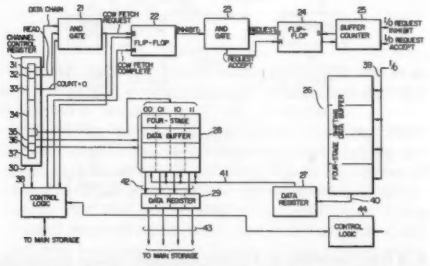
Yoshihiko Kadowaki, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,245

Claims priority, application Japan, Nov. 16, 1977, 52-136677; Feb. 1, 1978, 53-9268

Int. Cl.[3] **G06F** *3/00*

U.S. Cl. 364—900 **7 Claims**



1. A channel device for executing data transfer between I/O device and a main storage unit in accordance with a channel command word read out from said main storage unit, said main storage unit having an access width which is n times as large as a width of data transferred from said I/O device, comprising:

a first data buffer including a plurality of groups of n data storage positions each having a data width which is equal to the width of said data transferred from said I/O device;

a second data buffer including a plurality of data storage positions each having a data width which is equal to the width of said data transferred from said I/O device;

first data input means connected between said I/O device and said second data buffer for inputting a transferred data from said I/O device into a selected one of the data storage positions of said second data buffer;

data storage position designation means connected to said first data buffer for designating a selected one of the data storage positions of said first data buffer in accordance with a data address part of said channel command word;

second data input means connected between said first and second data buffer for reading out data from a selected one of the data storage positions of said second data buffer in which a data is stored by said first data input means and then inputting said data into the selected one of the data storage positions of said first data buffer, which are designated by said data storage position designated means; and

means connected between said first data buffer and main storage unit for reading out a data from a selected one of the data storage position groups of said first data buffer in which a data is stored by said second data input means and then transferring said data to said main storage unit.

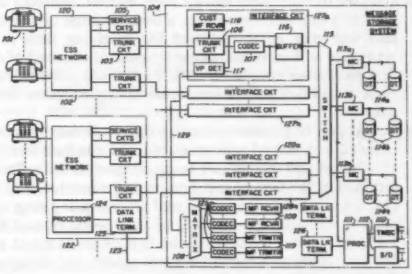
4,272,810
ARRANGEMENT FOR DELETING TRAILING MESSAGE PORTIONS

Geoffrey W. Gates, Woodridge, and Garry D. Kepley, Wheaton, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1978, Ser. No. 972,074

Int. Cl.[3] **H04M** *1/64;* **G06F** *7/22*

U.S. Cl. 364—900 **8 Claims**



1. A message storage system wherein a message comprises a plurality of sequential message segments each containing message information signals and wherein trailing message segments, representing final segments of said message, which are devoid of significant message information signals are eliminated from said message, said message storage system comprising:

input means (**106**, **107**, **116**);

storage means (**114***a* through **114***n*) for storing message segments comprised of message information signals;

detection means (**117**) connected to said input means for detecting significant message information signals received by said input means and for generating a message present signal during periods of time when significant message information signals are detected;

connection means (**113***a* through **113***n* and **115**) for connecting said input means and said storage means;

CHARACTERIZED IN THAT

said connection means comprises:

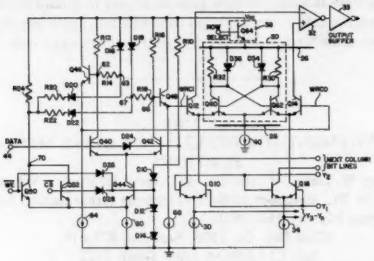
means (**310**, **311**) responsive to said message present signal for generating output signals defining message segments in which significant message signals are not detected; and

processor means (**203**) connected to said storage means and responsive to said output signals for writing control signals, indicating that no significant message information signals are stored therein, into storage locations of said storage means corresponding to message segments defined by said output signals, said processor means responsive to said means for generating output signals for eliminating from said storage means those message segments which are devoid of significant message signals.

4,272,811
WRITE AND READ CONTROL CIRCUIT FOR SEMICONDUCTOR MEMORIES

Thomas S. Wong, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 15, 1979, Ser. No. 84,943
Int. Cl.[3] G11C 7/00
U.S. Cl. 365—190 10 Claims



1. In an array of semiconductor memory cells, a write and read control circuit comprising:

a first pair of transistors having their emitter terminals coupled to a first current source, a base terminal of a first of said first pair being disposed for receiving data to be written in said array and a base terminal of a second of said first pair being coupled to a first reference potential, and each of said first pair of transistors having collector terminals;

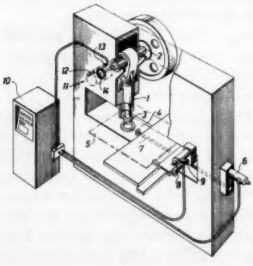
a second pair of transistors having their collector terminals coupled to a second reference potential, the base terminal of a first of said second pair being coupled to the collector terminal of the first of said first pair of transistors and the base terminal of a second of said second pair being coupled to the collector terminal of the second of said first pair, the emitter terminal of the first of said second pair being coupled to a second current source and forming a first output of said circuit, and the emitter terminal of the second of said second pair being coupled to a third current source and forming a second output of said circuit; and,

a pair of bias voltage means coupled to the base terminals of each of said second pair of transistors.

4,272,812
NUMERICAL CONTROL APPARATUS FOR STEPPED FEEDING AT PUNCH AND NIBBLING MACHINES

Sven L. I. Svensson, Tegelvägen 61, 723 48 Västeras, Sweden

Filed Apr. 25, 1979, Ser. No. 33,228
Claims priority, application Sweden, Apr. 26, 1978, 7804806
Int. Cl.[3] G06F 15/46; B26D 5/20; B23D 27/00
U.S. Cl. 364—475 7 Claims

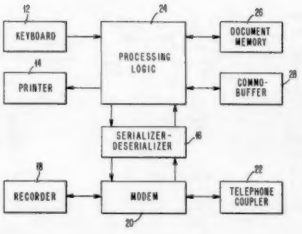


1. A numerically controlled nibbling machine comprising a fixed tool, a punching tool cooperating with said fixed tool, means including crank mechanism having a crankshaft for cyclically reciprocating said punching tool relative to said fixed tool between a working position and a release position, step feeding means for moving a workpiece step-by-step between said fixed tool and said punching tool while said punching tool is in release position, computer means controlling said feeding means, means for generating a multiplicity of pulses each revolution of said crankshaft, said pulse generating means comprising a rotor rotatable with said crankshaft and having a multiplicity of angular zones each representing a small angle of rotation of said crankshaft and a sensor for detecting passage of said zones as said rotor rotates to generate said pulses, means for feeding said pulses and information of the thickness of said workpiece to said computer means, said computer means being programmed to send a control signal to said step feeding means for blocking the workpiece feed movement when the number of pulses transmitted to said computer following top dead center, as a reference, corresponds to a first angular position of said crankshaft in which said punching tool just clears a workpiece of predetermined thickness, and subsequently to send a control signal to said feeding means for resumption of workpiece feed movement when the number of additional pulses transmitted to said computer corresponds to a second angular position of said crankshaft in which said punching tool again just clears said workpiece of predetermined thickness after having engaged said workpiece.

4,272,813
COMMUNICATING TYPEWRITER AND DICTATION SYSTEM UTILIZING ANALOG RECORDING AND TRANSMISSION TECHNIQUES

Dan M. Howell; Robert A. Kolpek, and William M. Schuller, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,251
Int. Cl.[3] G06F 1/00; G11B 31/00; H04M 11/00
U.S. Cl. 364—900 14 Claims



1. A type recording and communications system comprising:

a keyboard;

means for generating digital signals in response to selective keyboard depressions;

a memory means for storing the digital signals;

means for printing human understandable patterns corresponding to the digital signals;

a recording means for storing analog signals; said recording means being capable of recording audio voice and audio tone signals;

means for providing communication of audio tone signals between said type recording and communications system and a remote system;

means for converting the digital signals corresponding to the selective keyboard depressions into audio tone signals suitable for recording by said recording means;

means for converting audio tone signals from said recording means into corresponding digital signals suitable for storage in said memory means;

means operatively connecting said means for converting digital signals and said means for converting audio tone

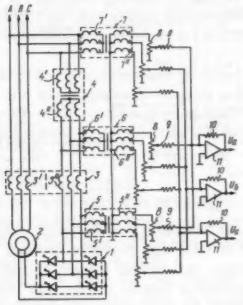
signals between said recording means for storing analog signals and said means for providing communication to convert audio tone signals to be transmitted to said remote system to digital signals and reconvert the digital signals to audio tone signals to eliminate distortion from the recorded analog tone signals.

4,272,814

APPARATUS FOR COMPENSATION OF COMMUTATION DIPS IN SYNCHRONIZING VOLTAGE CURVES

Vladilen G. Nakrokhin, ulitsa Baumana, 32a, kv. 9, and Vladimir M. Katunin, ulitsa Shefskaya, 30, kv. 8, both of Sverdlovsk, U.S.S.R.

Filed Oct. 15, 1979, Ser. No. 84,724
Int. Cl.³ H02M *1/08*
U.S. Cl. 363—129 **1 Claim**



1. An apparatus for compensation of commutation dips in an excitation system of a synchronous machine with a thyristor converter and a matching transformer, comprising:

three measuring transformers implemented as voltage transformers, each of said measuring transformers having primaries and secondaries equal in number to the number of phases of said thyristor converter, first ends of said primaries of first and second measuring transformers being coupled respectively to primaries and secondaries of said matching transformer in antiphase relation to each other, first ends of said primaries of a third measuring transformer being coupled to the arms of said thyristor converter in antiphase relation to said primaries of said second measuring transformer, second ends of said primaries of said measuring transformer being coupled to one another, said secondaries of said measuring transformers being connected in cophasal relation to one another, and first ends of said secondaries of said measuring transformers being joined together to constitute a common point;

adjusting resistors with movable contacts, second ends of said secondaries of each of said measuring transformers being coupled to a respective adjusting resistor;

operational amplifiers equal in number to the number of phases and adding the voltages relating to the corresponding phases of said thyristor converter; and

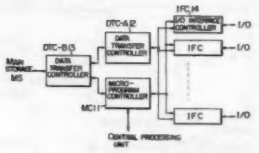
scaling resistors providing for the preset transfer ratios of said operational amplifiers, said movable contact of each of said adjusting resistors being connected in phase relation to the inputs of the corresponding operational amplifier via said scaling resistors.

4,272,815

CHANNEL CONTROL SYSTEM FOR CONTROLLING DATA TRANSFER THROUGH A PLURALITY OF CHANNELS WITH PRIORITY ASSIGNMENT

Yoshihiko Kadowaki; Hiroya Okuda, and Takashi Morikawa, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1979, Ser. No. 3,092
Claims priority, application Japan, Jan. 20, 1978, 53-4381
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **5 Claims**



1. A channel control system for controlling data transfer through a plurality of channels, comprising:

channel data buffer storage means having a plurality of storage positions for storing data transferred through said channels, each of said storage positions storing data for each of said channels;

channel control register means having a plurality of storage positions for storing data transfer control information, each of said storage positions storing data transfer control information for each of said channels;

selection means for accepting selectively one of a plurality of data transfer requests in said channels and for issuing the number identifying the accepted channel;

stage control means including series-connected stage control units for performing simultaneously separated processings for different channels, wherein said channel identifying number issued from said selection means is received at the first one of said stage control units and control operation is shifted sequentially from the first one to the last one of said stage control units;

channel control register control means for making reference to and updating the contents of said channel control register means in response to the channel identifying number from at least one of said control units;

channel data buffer storage control means for performing read-out/write-in operations of data for said channel data buffer storage means in response to the channel identifying number from at least one of said stage control units; and

means for performing data transfer with said channel data buffer storage control means in response to the channel identifying number from at least one of said stage control units.

4,272,816

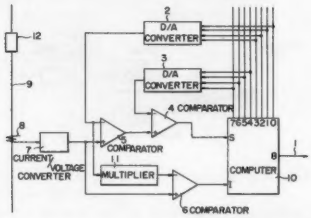
OVERCURRENT PROTECTING APPARATUS

Yoshihiro Matsumoto, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 23, 1979, Ser. No. 32,684
Claims priority, application Japan, Apr. 27, 1978, 53-49312; Apr. 27, 1978, 53-49324
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—483 **8 Claims**

1. An overcurrent protecting apparatus for interrupting

overcurrent flowing through an electric power line in accordance with a current/time characteristic, comprising a microcomputer, a current/voltage converter for converting a current flowing through said power line into a voltage, D/A converting means for converting an output of said microcomputer into a voltage, comparator means connected to compare the output of said current/voltage converter with the output of said D/A converting means, and to deliver an output to a first input of said microcomputer when the output of said current/voltage converter exceeds the output of said D/A converting means, and a separate comparator connected to compare the output of said current/voltage converter with a reference voltage indicative of a current value to be interrupted instantaneously and to deliver an output to a second input of said microcomputer when the output of said current/voltage converter exceeds said reference voltage, said microcomputer including means for storing current values and time values corresponding to said current/time characteristic, means for delivering outputs indicative of current values sequentially, starting from the highest value to the lowest value, to the input of said D/A converting means until an input is received at said first input, means for reading out a time value corresponding to the current value causing the receiption of said first input, and means for delivering a tripping instruction after expiration of said time value when said first input is received in the microcomputer, and for delivering said tripping instruction immediately when said second input is received.

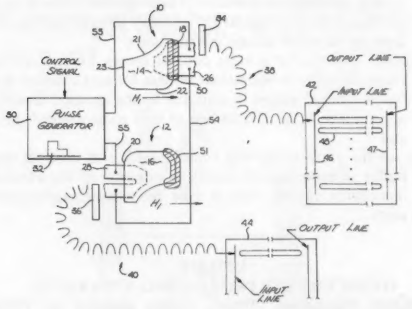


4,272,817

MULTIPLEXED SINGLE WALL DOMAIN GENERATORS

Donald K. Rose, Palo Alto, Calif., assignor to Intel Magnetics, Inc., Santa Clara, Calif.

Filed Apr. 2, 1979, Ser. No. 25,848
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—12 **10 Claims**



1. In a magnetic apparatus which includes a layer of magnetic material in which single wall domains are moved, an improved domain generation system comprising:

first and second generation means, each for generating domains, electrically coupled in series;

first propagation means for directing domains away from said first generation means, said first propagation means having a first orientation with respect to said first generation means; and,

second propagation means for directing domains away from said second generation means, said second propagation means having a second orientation with respect to said second generation means, said second orientation being opposite direction from said first orientation;

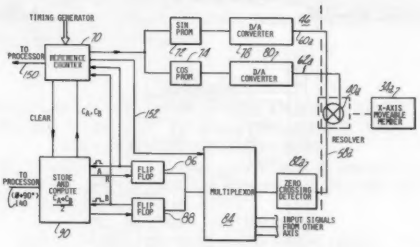
whereby said first and second generation means may be coupled to the same signal source to generate two independent streams of domains.

4,272,818

POSITION FEEDBACK CONTROL SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 19, 1979, Ser. No. 59,015
Int. Cl.³ G05B *1/03, 19/19*
U.S. Cl. 364—118 **15 Claims**



1. A feedback position control system controlling the displacement of at least one movable member of a numerical control apparatus and further having transducer means, responsive to excitation signals, operatively connected to each movable member for generating an output signal having a cyclically recurring phase relationship with respect to the excitation signals that is correlatable with the displacement of the at least one movable member, the feedback position control system comprising:

command means for generating a command signal indicative of the desired position of the at least one movable member;

feedback means for generating a feedback signal indicative of the motion of said at least one member comprising:

phase detecting means for determining the phase of said output signal relative to a determinable reference irrespective of the d.c. bias level of the output signal;

conversion means for converting said determined phase into a first signal indicative of the motion of said at least one movable member during a particular cycle of said output signal; and wherein said system further includes

comparator means for comparing said command signal and said feedback signal and for generating an error signal for driving said at least one member to the desired position.

4,272,819

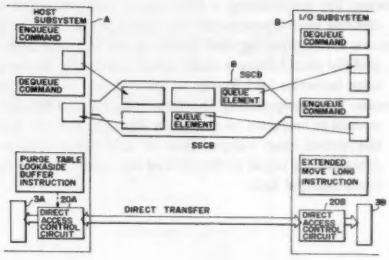
INTER-SUBSYSTEM DIRECT TRANSFER SYSTEM

Yutaka Katsumata, Inagi; Mitsuru Sanagi, and Hideo Tanaka, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 24,032
Claims priority, application Japan, Mar. 31, 1978, 53-37920
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **10 Claims**

1. An inter-subsystem direct transfer system for inter-subsystem communication between plural subsystems, said direct transfer system having a communication queue enqueued with

queue elements by one of said subsystems selected as a source subsystem and dequeued by another one of said subsystems selected as a destination subsystem, each said subsystem having a respective processor and a respective memory, the processor of each said subsystem connected to the memory and to a respective part of said direct transfer system comprised in the same subsystem as the processor, said direct transfer system comprising



direct memory access means located at least in part in each said subsystem for permitting each said destination subsystem to directly access a memory of said source subsystem, and

means for each said source subsystem to insert into respective ones of said queue elements memory access information necessary for said direct accessing of the memory of said source subsystem by said destination subsystem.

4,272,820

METHOD OF AND DEVICE FOR REDUCING ARTEFACTS IN COMPUTED TOMOGRAPHY IMAGES

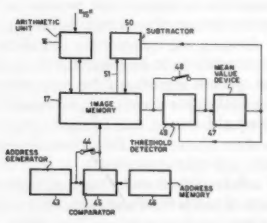
Peter Lux, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,453

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754361

Int. Cl.[3] **G01N** *23/00*

U.S. Cl. 364—414 **7 Claims**



1. A method for producing a corrected image, with reduced artefacts, from an uncorrected image obtained by the methods of computed tomography, the uncorrected image consisting of a reconstructed object image and an outer region which surrounds the object image, comprising the steps of:

scanning a layer of an object with radiation which penetrates the object so that the object, as well as a region surrounding the object, is irradiated in a large number of directions by radiation beams situated in the layer;

detecting the radiation to produce measuring data which characterizes the absorption of each radiation beam along corresponding measuring paths;

deriving image data, which represents the absorption in elements of the uncorrected image, from the measuring data; and subsequently

reducing artefacts which cross the uncorrected reconstruction image in the form of straight strips by:

deriving error signals from data elements in the outer region which lie along each measuring path and

subtracting the error signals from each individual element of the uncorrected image associated with that measuring pair.

4,272,821

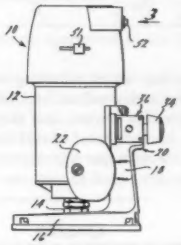
DIGITAL BLADE ADJUSTMENT READ-OUT FOR A PORTABLE POWER TOOL

Robert Bradus, Randallstown, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 18, 1979, Ser. No. 76,705

Int. Cl.[3] **G06F** *15/46;* **B27C** *5/10;* **G01B** *7/26*

U.S. Cl. 364—475 **11 Claims**



1. A digital read-out system for a portable power tool having a cutting implement and adjustment means for varying the position of the cutting implement, comprising:

(a) position encoder means connected to the adjustment means for producing a position signal related to the movement effected by the adjustment means,

(b) orientation means connected to the tool for producing a signal related to the orientation of the tool with respect to a reference plane,

(c) computer means responsive to the position signal and to the orientation signal for calculating the amount of adjustment relative to a reference position and for controlling the orientation of the read-out, and

(d) digital display means operatively connected to the computer means for indicating the amount of adjustment in a display oriented with respect to the reference plane regardless of the orientation of the tool.

4,272,822

APPARATUS FOR CONVERTING A MECHANICAL DISPLACEMENT TO AN ELECTRICAL SIGNAL

Takeshi Yasuhara, and Keiichiro Tago, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 8, 1979, Ser. No. 64,798

Claims priority, application Japan, Aug. 17, 1978, 53-99546

Int. Cl.[3] **G12B** *1/00*

U.S. Cl. 364—481 **6 Claims**

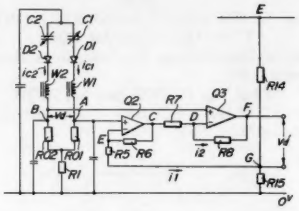
1. Converting apparatus comprising:

displacement detecting means including first and second capacitors having, respectively, first and second capacitances which differentially change in response to a mechanical displacement applied thereto, and means for coupling an oscillating source for supplying a predetermined AC signal to said first and second capacitors, said displacement detecting means producing a sum signal proportional to the sum of said first and second capacitances and a difference signal proportional to the difference between said first and second capacitances;

a first converting circuit receiving the sum signal from said displacement detecting means, said first converting circuit converting said sum signal into a pulse signal with a duty

ratio corresponding to the sum of said first and second capacitances;

a second converting circuit receiving the difference signal from said displacement detecting means, said second converting circuit converting said difference signal into a voltage corresponding to the difference between said first and second capacitances; and



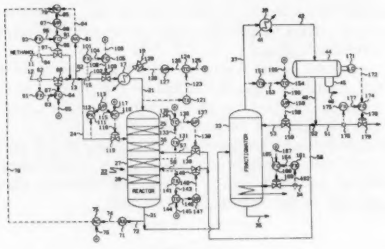
a third converting circuit receiving said pulse signal from said first converting circuit and said voltage from said second converting circuit, said third converting circuit multiplying the reciprocal of said duty ratio by said voltage to produce an output signal corresponding to the ratio of said difference signal to said sum signal.

4,272,823

CONTROL SYSTEM FOR A REACTOR

Joe V. Pool, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 26, 1979, Ser. No. 88,716
Int. Cl.[3] G06G 7/58
U.S. Cl. 364—500 **16 Claims**



1. Apparatus comprising:

a reactor having at least first, second and third catalyst beds in series;

a first heat exchange means;

means for supplying a first portion of a feed stream through said first heat exchange means to said reactor at a point prior to said first catalyst bed;

means for supplying a heating fluid to said first heat exchange means to thereby supply heat to said first portion of said feed stream;

means for supplying a second portion of said feed stream to said reactor at a point after said first catalyst bed but before said second catalyst bed;

means for supplying a diluent fluid stream to said reactor at a point after said second catalyst bed but before said third catalyst bed;

means for establishing a first signal representative of the feed inlet temperature of said first catalyst bed;

means for establishing a second signal representative of the desired feed inlet temperature for said first catalyst bed;

means for comparing said first signal and said second signal and for establishing a third signal responsive to the difference between said first signal and said second signal;

means for manipulating the flow rate of said heating fluid to said first heat exchanger means to thereby maintain the actual inlet temperature of said first catalyst bed substantially equal to the desired inlet temperature for said first catalyst bed;

means for establishing a fourth signal representative of the inlet temperature of said third catalyst bed;

means for establishing a fifth signal representative of the desired inlet temperature for said third catalyst bed;

means for comparing said fourth signal and said fifth signal and for establishing a sixth signal responsive to the difference between said fourth signal and said fifth signal; and

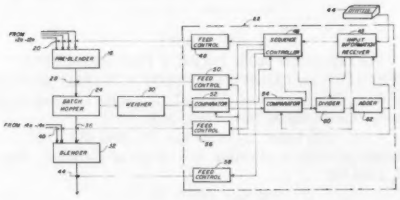
means for manipulating the flow rate of said diluent fluid stream in response to said sixth signal to thereby maintain the actual inlet temperature of said third catalyst bed substantially equal to the desired inlet temperature for said third catalyst bed.

4,272,824

BATCH PRODUCT PREPARATION

Nathan Lewinger, Rochester, and John A. Gillis, Webster, both of N.Y., assignors to Pennant Products, Inc., Rochester, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,415
Int. Cl.[3] G05D 11/02
U.S. Cl. 364—502 **6 Claims**



1. In a process for preparing product from a plurality of constituent ingredients wherein said process includes mixing a multiple batch of certain of such ingredients in a receptacle and sequentially dividing and transporting substantially equal portions of said mixed batch to an apparatus for combination with certain other of such ingredients for preparing said product, means for controlling the division of said mixed batch into said substantially equal portions, said control means comprising:

an intermediate chamber in flow communication with said receptacle and said apparatus;

means for substantially transferring a predetermined portion of said mixed batch from said receptacle to said intermediate chamber and thence to said apparatus;

means for weighing said portion of said mixed batch delivered to said intermediate chamber;

means for comparing the weight of said portion of said mixed batch delivered to said intermediate chamber with a predetermined desired portion of said mixed batch to determine any error between said delivered portion and said predetermined desired portion;

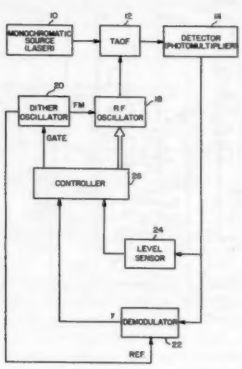
means for dividing any such determined error by the remaining number of substantially equal portions of said mixed batch to establish a new desired predetermined portion of said mixed batch; and

means operatively coupled to said transferring means for adjusting the predetermined portion of said mixed batch to be transferred from said receptacle to said new desired predetermined portion established by said dividing means.

4,272,825
TEMPERATURE COMPENSATION OF TUNABLE ACOUSTIC OPTICAL FILTERS

Leonard M. Smithline, and George J. Wolga, both of Ithaca, N.Y., assignors to Lansing Research Corporation, Ithaca, N.Y.

Filed May 21, 1979, Ser. No. 40,644
Int. Cl.³ G02F *1/135, 1/29;* **G05B** *15/02*
U.S. Cl. 364—571 **6 Claims**



2. Apparatus for compensating the tuning curve of a tuning curve being a temperature dependent relationship of the center wavenumber of the TAOF to the frequency of an acoustic beam, said apparatus comprising:

(a) at least one monochromatic source for providing light at a reference wavenumber to the optical input of the TAOF;

(b) photodetector means for providing a signal representing the intensity of light at an optical output of the TAOF;

(c) means for providing a variable frequency acoustic beam to the TAOF;

(d) means for varying the frequency of the acoustic beam to the TAOF in response to the signal representing the intensity of light from the TAOF until the signal is maximized by causing the center wavenumber of the TAOF to coincide with a reference wavenumber, and for holding the frequency of the acoustic beam constant at the point of coincidence; and

(e) means for ratioing the frequency of the acoustic beam to the frequency of an acoustic beam corresponding to the reference wavenumber at a reference TAOF temperature, whereas the acoustic frequency ratio is a function of the temperature of the TAOF, and;

(f) means for storing values representing a tuning curve relationship of the center wavelength of the TAOF and the frequency of an acoustic beam at a reference condition and for modifying said values by the acoustic frequency ratio relationship to correct for the temperature of the TAOF.

4,272,826
ELECTRONIC CALCULATOR

Simon Deutsch, Forest Hills, N.Y., assignor to Peerless Instrument Co., Inc., Elmhurst, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,369
Int. Cl.³ G06F *3/02, 15/02;* **G04B** *19/30*
U.S. Cl. 364—709 **18 Claims**

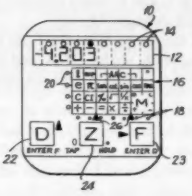
1. A small-size electronic calculator comprising, in combination:

a first section for displaying successive indicia in a first form;

a second section for displaying successive indicia in a second form;

means for electrically connecting said first and second sections in an X-Y matrix;

a plurality of manually operable input keys, the keys including a first stepping key for successively advancing the display of said first form of indicia, and a second stepping key for successively advancing said second form of indicia;



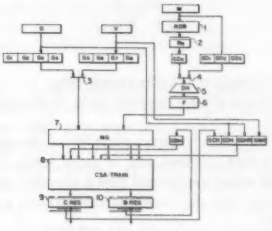
a calculator logic circuit connected to the first and second sections; and

circuit means responsive to the actuation of said second key for entering a selected first form of indicia advanced by said first key in said logic circuit and responsive to the actuation of said first key for entering a selected second form of indicia advanced by said second key in said logic circuit.

4,272,827
DIVISION PROCESSING METHOD SYSTEM HAVING 2N-BIT PRECISION

Norio Inui, Yokohama; Noriaki Kume, and Tetsuro Okamoto, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 816,799, Jul. 18, 1977, abandoned, which is a continuation of Ser. No. 582,362, May 30, 1975, abandoned. This application Mar. 16, 1979, Ser. No. 21,011
Claims priority, application Japan, May 31, 1974, 49-61510
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—764 **13 Claims**



1. A method for performing division processing with 2 N-bit precision utilizing only N-bit precision components which perform at least multiplication processing and division processing, wherein the division function to be performed with 2 N-bit precision is expressed as:

$$\frac{C + D \times 2^{-n}}{A + B \times 2^{-n}}$$

(n=N, the number of digit positions in each of the selected binary numbers A, B, C and D) and wherein the answer to said division function is represented by:

$$Q_1 + Q_2 \times 2^{-n}$$

where Q_1 and Q_2 are binary quotients each of N bits; the method comprising the steps of:

approximating said binary quotient Q_1, in accordance with division processing of N-bit precision, to produce a Q_1 approximation which includes an error value;

operating on said Q_1 approximation in accordance with said N-bit precision division processing and in conjunction with said A, B, C and D terms so as to calculate an approximation of said quotient Q_2; and

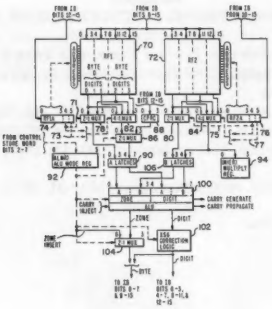
generating said binary quotient Q_1, from said Q_1 approximation in conjunction with said A and C terms, in accordance with N-bit precision division processing.

4,272,828

ARITHMETIC LOGIC APPARATUS FOR A DATA PROCESSING SYSTEM

Virendra S. Negi, Pepperell, and Arthur Peters, Sudbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1979, Ser. No. 842
Int. Cl.[3] G06F *7/50*
U.S. Cl. 364—900 **11 Claims**



1. Arithmetic logic apparatus comprising:

A. means for supplying operand data to be arithmetically processed;

B. register file means having a plurality of storage locations for storing said operand data in word units, each of said word units being partitioned into a plurality of byte units and each said byte unit being partitioned into a plurality of digit units;

C. an arithmetic unit for arithmetically processing said operand data;

D. selection means for feeding data stored in said register file means to said arithmetic unit for processing;

E. address means for supplying address data to said register file means for accessing operand data stored therein and for supplying selection data to said selection means for controlling the latter to feed accessed operand data from said register file means to said arithmetic unit in either byte units or digit units; and

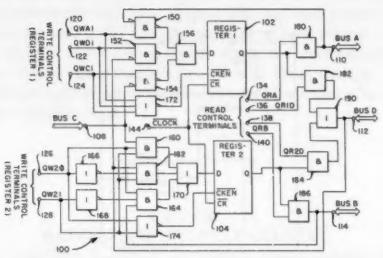
F. control means coupled to said address means for modifying said address data and said selection data in a timed sequence whereby word units of said operand data are selectively accessed in said register file means and fed to said arithmetic unit sequentially in byte units or in digit units for either byte-order processing or digit-order processing.

4,272,829

RECONFIGURABLE REGISTER AND LOGIC CIRCUITRY DEVICE FOR SELECTIVE CONNECTION TO EXTERNAL BUSES

Carson T. Schmidt, San Diego; William P. Ward, Poway, and Rocky M. Y. Young, San Diego, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 29, 1977, Ser. No. 865,457
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—900 **8 Claims**



1. In a data processing system, a register circuit in the form of an integrated circuit structure for use at each of a plurality of locations in order to reduce the number of different types of integrated circuits in the data processing system, wherein at each location there are external data buses, including

(a) at least one external data bus for transferring data into the register circuit, and

(b) at least one external data bus for transferring data out of the register circuit,

and wherein at each location there is a different number of at least one of

(a) the external data buses for transferring data into the register circuits and

(b) the external data buses for transferring data out of the register circuits,

the register circuit comprising:

(A) at least two multibit registers, each of said two registers for storing a data word or the like and having a data input and a data output;

(B) a plurality of data terminals on the integrated circuit structure for connection to the external data buses, including first and second bi-directional data input/output terminals, each of the first and second bi-directional terminals for connection to an external bi-directional data bus; and

(C) logic means for receiving external control signals and in response selectively connecting said plurality of data terminals to the data inputs and data outputs of said two registers, including means for connecting the first bi-directional data terminal to either one of the data input and data output of both said two registers and connecting the second bi-directional data terminal to either one of the data input and data output of at least one of said two registers, so that the register circuit selectively connects a different number of at least one of

(a) the external data buses for transferring data into the register circuits, and

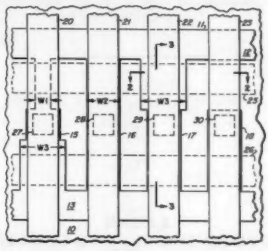
(b) the external data buses for transferring data out of the register circuits,

to the data inputs and data outputs of said two registers at each of the plurality of locations in the data processing system.

4,272,830
ROM STORAGE LOCATION HAVING MORE THAN TWO STATES

Jerry D. Moench, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1978, Ser. No. 972,619
Int. Cl.³ G11C *11/40, 13/00*
U.S. Cl. 365—45 **10 Claims**

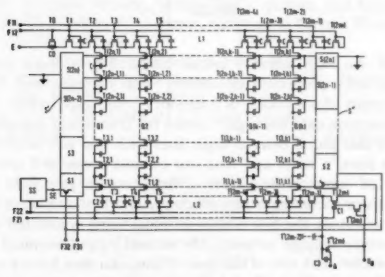


1. A read-only memory array having a plurality of storage locations for storing digital information wherein at least one of the storage locations can contain digital information which can be represented by more than one binary digit, comprising: at least a first field effect transistor having a gate electrode region of a first dimension; and at least a second field effect transistor having a gate electrode region of a second dimension so that the second field effect transistor can conduct more current than the first field effect transistor to provide a storage location containing digital information represented by more than one binary digit.

4,272,831
TWO-DIMENSIONAL ANALOG MEMORY

Manfred F. Ullrich, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 14, 1979, Ser. No. 93,959
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851111
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—45 **2 Claims**



1. Two-dimensional analog memory monolithically integrated with insulated-gate field-effect transistors, operating on the charge-transfer, and more particularly on the bucket-brigade principle, for temporarily storing the signals originating with the two half pictures of a (TV) video signal, wherein:

two partial memories are in such a way multiplexed-operated that, while the one-half picture is being read into the one partial memory, the other half picture as previously read into the other partial memory, is read out of this partial memory,

each partial memory comprises a first series longitudinal chain of series-connected stages of the same design operated by a first pair of clock signals, and transversal chains connected to each of the even-numbered or to each of the odd-numbered stages of the first longitudinal chain, with an equal number n of series-connected stages which are interconnected with respect to the control electrodes of their transistors, as well as a second longitudinal chain of series-connected stages of the same design and operated by a second pair of clock signals, with the even-numbered or odd-numbered stages thereof being connected to the end of each time one transversal chain,

an n-stage shift register of transistors of the same conductivity and control type is moreover associated with each partial memory, in which one stage contains a coupling transistor applied with the one end of the control current path to the information input, a first switching transistor applied with the one end of its controlled current path to the zero point of the circuit, and a second switching transistor, as well as a capacitor (=simple shift register stage), all of which being interconnected in such a way that the series-arranged controlled current paths of both the first and the second switching transistor are applied between the zero point of the circuit and the first clock signal input, that the capacitor is applied between the gate terminal of the second switching transistor and the gate terminals of both the first switching transistor and the coupling transistor being applied in common to the second clock signal input, and in which, alternating in the stages, the first and the second or respectively the second and the first clock signal input are supplied by respectively one of the two parts of a third clock signal pair, and

the n parallel-outputs of the shift register are connected to the corresponding first, second n-th stages of the transversal chains as interconnected with one another, with each time one stage being set in the shift register, with this information being shifted in direction from the second to the first longitudinal chain, controlled by the third pair of clock signals,

characterized in that:

the two partial memories together with the two associated shift reigsters are in such a way combined on one single semiconductor chip that the analog memory comprises one single first longitudinal chain (**L1**), **2**n-stage transversal chains (**Q1**, **Q2**, **Q(k−1)**, **Q(k)**), one single second longitudinal chain (**L2**) and one single **2**n-stage shift register (**S**),

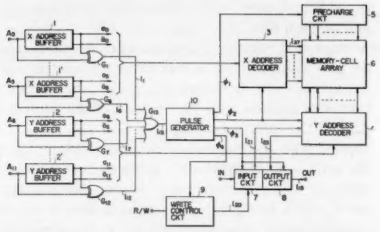
merely the first shift register stage(**S1**) is a shift register stage enlarged by an additional switching transistor (**47**), a load transistor (**50**), a by-pass transistor (**51**) and an additional capacitor (**52**), with these four additional circuit elements being interconnected in such a way that the series-arranged controlled current paths of both the additional switching transistor and the load transistor (**47**, **50**) will come to lie between the zero point of the circuit and the second clock signal input (**49**, **49'**), that the controlled current path of the by-pass transistor (**51**) will come to lie in parallel with that of the first switching transistor (**45**), that the additional capacitor (**52**) will come to lie between the gate terminal of the by-pass transistor (**51**) and the zero point of the circuit, that the gate terminal of the additional switching transistor (**47**) will come to lie at the setting input (**SE**), that the gate terminal of the load transistor (**50**) will come to lie at the second clock signal input (**49**, **49'**) and that the gate terminal of the by-pass transistor (**51**) will come to lie at the point connecting both the additional switching transistor and the load transistor (**47**, **50**), and that:

the signal for setting the respective one shift register stage is produced with the aid of a setting stage (**SS**) integrated as well.

4,272,832
SEMICONDUCTOR MEMORY DEVICE

Tsuneo Ito, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,553
Claims priority, application Japan, May 24, 1978, 53-61092
Int. Cl.[3] G11C 7/00
U.S. Cl. 365—189 5 Claims

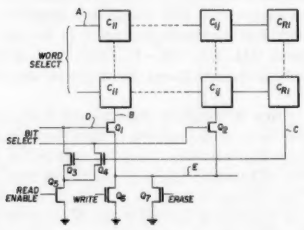


1. A semiconductor memory device comprising an input address buffer circuit and a memory cell circuit which are constructed of static logic circuits, an address decoder circuit which is constructed of a dynamic logic circuit, a detector circuit which detects a change in an output signal of said address buffer circuit, and a pulse generator circuit which is started operating by an output signal of said detector circuit and which provides a clock signal for said address decoder circuit.

4,272,833
TWO SWITCHABLE RESISTIVE ELEMENT PER CELL MEMORY ARRAY

David L. Taylor, Carrollton, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 9, 1979, Ser. No. 82,506
Int. Cl.[3] G11C 11/40
U.S. Cl. 365—210 18 Claims



11. In a memory array having a plurality of word lines and a plurality of bit lines interconnected at their intersections by a plurality of memory cells, said memory cells comprising:

first switch means interconnecting a word line and a bit line;

a first bistable resistor, switchable from a high resistance state to a low resistance state for a potential applied above its threshold value, in series with said first switch means and said bit line;

a second switch means interconnecting said word line and said bit line;

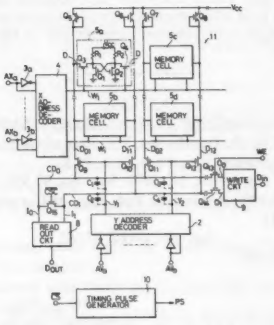
a second bistable resistor, switchable from a high resistance state to a low resistance state for a potential applied above its threshold value, in series with said second switch means and said bit line; and

output means connected between said first and second bistable resistors and said bit line for providing a first logic output on said bit line when the cell is addressed by a ramp potential and when the threshold difference of said first and second bistable resistor is relatively large and for providing a second logic output on said bit line when the threshold difference of the first and second bistable resistors is relatively small.

4,272,834
DATA LINE POTENTIAL SETTING CIRCUIT AND MIS MEMORY CIRCUIT USING THE SAME

Yoshio Noguchi, and Tsuneo Ito, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,370
Claims priority, application Japan, Oct. 6, 1978, 53/22616; Jul. 11, 1979, 54/86927
Int. Cl.[3] G11C 11/40, 13/00
U.S. Cl. 365—230 17 Claims



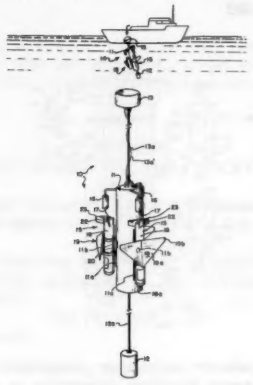
10. An MIS memory circuit comprising: a plural pairs of digit lines connected commonly with an input and output terminals of a plurality of a memory cells, respectively; a pair of common data lines; gate means for connecting one selected from said plural pairs of digit lines with said pair of common data lines; a wirte and read out circuits connected with said pair of common data lines; a first insulate gate field effect transistor including a gate electrode and first and second output terminals, the first output terminal being connected with a reference voltage terminal, the second output terminal being connected with one of said pair of common data lines; a second insulate gate field effect transistor including a gate electrode and first and second output terminals, the first output terminal being connected with said reference voltage terminal, the second output terminal being connected with the other of said pair of common data lines; and a control circuit having its output terminal connected with the gate electrodes of the first and second insulate gate field effect transistor, whereby the respective potentials at said pair of common data lines are forcibly changed to the potential at said reference voltage terminal by feeding the control signals at a high level from said control circuit to said gate electrodes before the reading operation of data signals out of said memory cells is started.

4,272,835

MASTER BUOY SYSTEM FOR ACOUSTIC ARRAY DEPLOYMENT, USING UNDERWATER GLIDE BODIES REMOTELY LAUNCHED FROM A SUBMERGED POD

Robert A. Flood, San Diego; Howard R. Talkington, La Jolla; Richard A. Wheelock, and Robert L. Watts, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1977, Ser. No. 800,584
Int. Cl.[3] H04B 1/59
U.S. Cl. 367—4 20 Claims



1. A method of deploying an array of hydrophones in a body of water comprising:

releasing an anchor portion from a central body portion carrying a number of hydrophone transport vehicles;

disengaging the vehicles from the central body portion;

gliding the vehicles radially outwardly from the central body portion to rest on the bottom boundary of the body of water; and

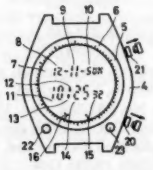
freeing the hydrophones from the radially disposed vehicles.

4,272,836

ALARM TIMEPIECE

Munetaka Tamaru; Minoru Natori, both of Tokyo, and Sizuo Yamaguchi, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1979, Ser. No. 2,217
Claims priority, application Japan, Jan. 12, 1978, 53-2302; Jan. 14, 1978, 53-3085; Apr. 4, 1978, 53-39394
Int. Cl.[3] G04B 23/02; G04C 19/00
U.S. Cl. 368—74 10 Claims



10. An alarm display system for an electric timepiece having a actual time of day display, said display system comprising:

storage means for storing a plurality of alarm times;

a plurality of alarm display devices circumferentially arranged around the time of day display, said alarm display devices simultaneously and continuously indicating said plurality of alarm times stored in said storage means; and

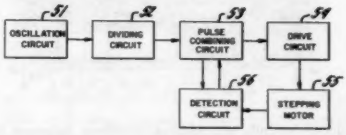
alarm control means for independently and selectively setting or resetting each of said alarm times stored in said storage means.

4,272,837

ELECTRONIC TIMEPIECE WITH ROTATION DETECTOR

Makoto Ueda; Akira Torisawa; Katsuhiko Satoh; Masaharu Shida; Masaaki Mandai, and Kazuhiro Asano, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Apr. 20, 1978, Ser. No. 898,400
Claims priority, application Japan, Apr. 23, 1977, 52-47094
Int. Cl.[3] G04B 19/04; G04C 19/00
U.S. Cl. 368—80 4 Claims



1. In an electronic timepiece:

an oscillator circuit for generating an oscillating time standard signal;

a dividing circuit for dividing the time standard signal and for developing different output pulse signals having different respective pulse repetition rates;

a stepping motor having a rotor and a coil;

a drive circuit responsive to control signals for driving said stepping motor at a normal rate and for applying a corrective pulse to said stepping motor according to the control signals;

pulse combining circuit means for combining the different output pulse signals from said dividing circuit for generating the control signals and for applying the control signals to said drive circuit, said pulse combining circuit means normally generating a control signal effective to drive said stepping motor at a normal rate and said pulse combining circuit means responsive to a correction signal to control said drive circuit to apply a corrective pulse to said stepping motor;

detecting circuit means for detecting rotation and nonrotation of said stepping motor rotor and for generating a detection voltage signal indicative of the state of rotation of said stepping motor rotor; and

voltage comparing circuit means for comparing the detection voltage signal with a standard voltage value and for applying a correction signal to said pulse combining circuit means when non-rotation of said stepping motor rotor is detected after a drive pulse is applied to said stepping motor.

4,272,838

ELECTRONIC WATCH MODULE STRUCTURE

Noriyuki Kasama, Hino, and Singo Ichikawa, Tanashi, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,252
Claims priority, application Japan, Mar. 22, 1978, 53/032556; Mar. 22, 1978, 53/032558; Apr. 17, 1978, 53/044181; Jun. 23, 1978, 53/076200; Jun. 23, 1978, 53/086138[U]; Jun. 23, 1978, 53/086139; Jun. 28, 1978, 53/077408; Jul. 18, 1978, 53/087592
Int. Cl.[3] G04C 23/02; G04B 37/00; G04C 19/00, 17/00
U.S. Cl. 368—88 53 Claims

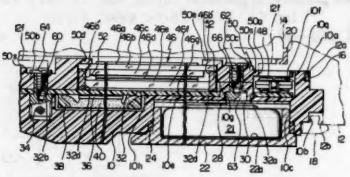
1. A module structure for an electronic watch having a case body and a battery, comprising:

a single body of plastic base serving as a substrate and a back cover of the watch, adapted to be disposed in and supported by a case body, said plastic base having a first axially extending recess formed on one side of said plastic

base, and a radial wall portion continuous with said first axially extending recess;

a circuit board disposed in said first axially extending recess and placed on said radial wall portion, said circuit board supporting an integrated circuit chip and having a printed circuit pattern thereon;

a liquid crystal display cell disposed on one side of said circuit board opposite said radial wall portion of said plastic base, said display cell including an upper glass plate having rows of printed electrode terminals, and a lower glass plate;



flexible electrically conductive members disposed between said upper glass plate and said one side of said circuit board to provide electrical connection between said rows of printed electrode terminals and said circuit pattern of said circuit board;

display cell retaining means for retaining said display cell in a fixed place relative to said circuit board; and

means for securing said display cell retaining means to the one side of said plastic base.

4,272,839

ELECTRIC TIMER

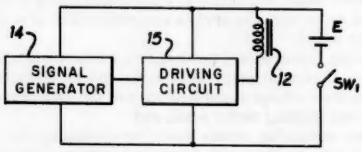
Kiyoshi Kitai, and Nobuo Shinozaki, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,913

Claims priority, application Japan, Mar. 10, 1978, 53-28129

Int. Cl.[3] G04F *8/00*; G04B *15/00*

U.S. Cl. 368—107 **5 Claims**



1. An electric timer comprising: a rotatably mounted operating member movable from a datum position to any one of a plurality of angular positions respectively corresponding to periods of time for which it is desired to set the timer; means cooperative with the operating member for indicating the setting of the operating member to a desired angular position; means for urging the operating member to rotate in a predetermined direction from the desired angular position back to the datum position; a rotatably mounted toothed member having a plurality of teeth; means connecting the toothed member to the operating member when the operating member is rotated by the urging means; a pivotally mounted escapement member having a magnetic portion and being engageable with the teeth of the toothed member to control the rotation of the toothed member and thereby the operating member; a signal generator for producing time reference pulses; and electro-magnetic means including a permanent magnet disposed adjacent the magnetic portion of the escapement member for exerting a magnetic force to normally magnetically attract the escapement member, and at least one winding receptive of the time reference pulses and configued to reduce the magnetic force exerted by the permanent magnet when energized by the time reference pulses to permit the pivoting of the escapement member and thereby the rotation of the toothed member and the operating member under the action of the urging means.

4,272,840

SEMICONDUCTOR INTEGRATED CIRCUIT FOR A TIMEPIECE

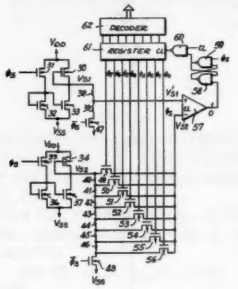
Shinji Morozumi, and Tatsushi Asakawa, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 963,056

Claims priority, application Japan, Nov. 25, 1977, 52-141153

Int. Cl.[3] G04B *17/12, 17/16, 17/20*; H03L *1/00*

U.S. Cl. 368—202 **15 Claims**



1. A semiconductor temperature compensation circuit for use in an electronic timepiece, comprising in combination, temperature detecting means including a first subcircuit having at least two MOS transistors and a second like configured subcircuit having at least two MOS transistors at least one like polarity MOS transistor in each subcircuit having a different threshold value with respect to the remaining MOS transistors in each subcircuit so that said first and second subcircuits each produce temperature signals having a voltage level determined by the different threshold values of said one like polarity MOS transistor, and at least one like positioned transistor in each subcircuit having a different conductive coefficient with respect to each other so that said first and second subcircuits each produce temperature signals that are distinctly varied in response to changes in temperature and a plurality of semiconductor elements including MOS transistors defining a temperature signal converting circuit for receiving said temperature signals produced by said temperature detecting means and, in response thereto, converting same into a temperature compensation signal, each of the semiconductor elements in said temperature signal converting circuit and the MOS elements defining said temperature detecting means being monolithically integrated into the same substrate.

4,272,841

TIMEPIECE

Francois Nickles, Cornaux, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Continuation of Ser. No. 841,564, Oct. 12, 1977, abandoned. This application Oct. 2, 1979, Ser. No. 81,165

Claims priority, application Switzerland, Oct. 22, 1976, 13358

Int. Cl.[3] G04B *19/00*; G04G *5/00, 9/02*

U.S. Cl. 368—224 **14 Claims**

1. An electronic module for assemblege with a timepiece that carries a push button, said module comprising a metallic frame; a display cell mounted to said metallic frame in electrical communication therewith; and a circuit board in electrical communication with said display cell and mounted to said metallic frame but insulated therefrom, said circuit board having at least one contact, said metallic frame being electrically connected to a source of electric energy and having metallic

spring means normally spaced from but cooperative with said contact and adapted to constitute a switch upon translational movement of said spring means by the push button, said spring

means serving as a return spring for such push button and being integral with and formed of portions of said metallic frame to provide a compact, self contained electronic module structure.

4,272,842

SUSPENSION DEVICE FOR THE CLOCKWORK OF A CLOCK

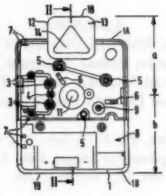
Udo Schultheiss, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,597

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 7827033[U]

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—316 **5 Claims**



1. A clock comprising a two-section housing, a first of said housing sections presenting a clockwork receiving area which receives a clockwork, the second of said housing sections being removably insertable onto said first housing section to close said area, said first housing section being formed with a suspension means comprising a plate-shaped suspension member and a suspension aperture therethrough, said plate-like member and aperture projecting partially into said clockwork receiving area, said plate-like suspension member having a plurality of stiffening ribs projecting outwardly therefrom and joining said plate-like suspension member to said first housing section.

4,272,843

SYSTEM FOR TRANSMITTING SERVICE COMMUNICATIONS

Wolfgang Schneider, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,227

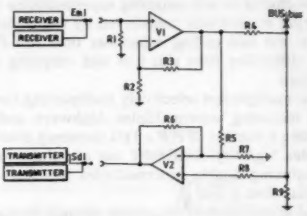
Int. Cl.³ H04J *1/14*

U.S. Cl. 370—24 **4 Claims**

1. In combination with a service channel for a radio system wherein signals are sent over said service channel at the lower end of the system base band, said radio system including a transmitter and a receiver associated with said transmitter, and a data transmission device and a voice instrument associated with said data transmission device, apparatus comprising:

a common bus bar;

a first network coupling said transmitter and receiver to said bus bar, said first network including a first operational amplifier having its direct input connected to receive service channels signals from said receiver; a second operational amplifier having its output connected to deliver service channel signals to said transmitter; a first receiver connecting the output of said first amplifier to said bus bar; a first voltage divider connecting the output of said first amplifier to the negating input of said second amplifier; a



second voltage divider connecting the output of said first amplifier to the negating input thereof; and a second resistor connecting the direct input of said second amplifier to said bus bar, whereby the output of said first amplifier is connected to the direct input of said second amplifier via said first resistor, said bus bar and said second resistor; and

a second network coupling said data transmission device and said voice instrument to said bus bar.

4,272,844

MULTIPLEX TIME DIVISION SWITCHING NETWORK UNIT OF THE TIME-TIME TYPE

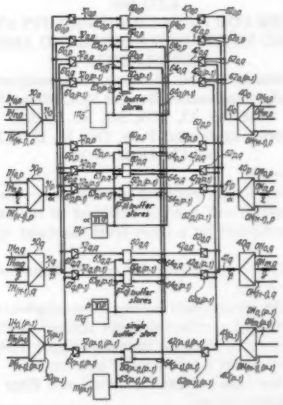
Alain Y. Roche, Oliver F. Louvet, both of Lanion, Daniel J. Mell, Perros Guirec, Herve Le Bris, Pleumeur Bodou, France, all of assignor to Centre National d'Etudes de Telecommunication, Issy les Moulineaux, France

Filed Jul. 2, 1979, Ser. No. 54,238

Claims priority, application France, Jun. 30, 1978, 78 19638; Apr. 12, 1979, 79 09332; May 31, 1979, 79 14062

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—66 **4 Claims**



1. Time division multiplex switching network unit for switching a time slot i assigned to a calling subscriber to a time slot j assigned to a called subscriber, said network unit comprising:

in an input stage, a plurality of P groups of N incoming multiplex highways and supermultiplexers multiplexing each of said multiplex highway groups into an incoming supermultiplex highway, said calling subscriber time slot i

and called subscriber time slot j being included in said incoming multiplex highways and being respectively transferred by said supermultiplexers into time slots α and β in said incoming supermultiplex highways;

in an output stage, a plurality of P outgoing supermultiplex highways and superdemultiplexers demultiplexing each of said outgoing supermultiplex highways into a plurality of N outgoing multiplex highways, the time slots α and β being included in said outgoing supermultiplex highways and being respectively transferred by said superdemultiplexers into said calling subscriber time slot i and said called subscriber time slot j in said outgoing multiplex highways;

additional multiplexers selectively multiplexing two by two the P incoming supermultiplex highways and thereby providing a number of $P(P+1)/2$ incoming double supermultiplex highways, whereby one and the same among said incoming double supermultiplex highways contains both time slots α and β;

additional demultiplexers selectively demultiplexing two by two the $P(P+1)/2$ outgoing double supermultiplex highways, one and the same among said double supermultiplexing highways containing both the time slots α and β and thereby providing a number of P outgoing supermultiplex highways;

$P(P+1)/2$ bidirectional buffer stores connected to said incoming and outgoing double supermultiplex highways;

P control stores associated with and respectively controlling P, $(P-1)$, $(P-2)$, . . . 2, 1 bidirectional buffer stores, said control stores including means for transferring the word contained in the word location of given address γ in a buffer store associated with said control store into time slot α in an outgoing double supermultiplex highway; means for transferring the word contained in time slot α in an incoming double supermultiplex highway into the word location of address γ in said buffer store; means for transferring the word contained in the word location of address γ in said buffer store into time slot β in said outgoing double supermultiplex highway; and means for transferring the word contained in time slot β in said incoming double supermultiplex highway into the word location of address α in said buffer store.

4,272,845

RECEIVER FOR DATA-TRANSMISSION SYSTEM OPERATING WITH SINGLE-SIDEBAND AMPLITUDE MODULATION

Francesco Fiumani, Settimo Milanese, Italy, assignor to Societa Italiana Telecomunicazion Siemens SpA, Milan, Italy

Filed Oct. 17, 1979, Ser. No. 85,794

Claims priority, application Italy, Oct. 18, 1978, 28849 A/78

Int. Cl.[3] H04L *3/00*

U.S. Cl. 375—20 **9 Claims**

1. A receiver for an incoming message wave formed by an attenuated carrier and a single sideband of the same carrier amplitude-modulated by a three-level baseband signal, comprising:

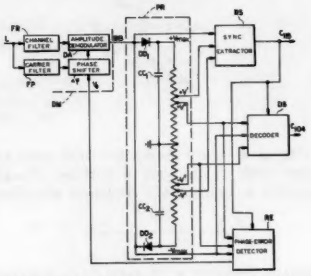
filter means for separating the carrier from the incoming message wave;

an amplitude demodulator having a message-wave input and further having a collateral input connected to said filter means for recovering the baseband signal from said message wave under the control of said carrier;

phase-shifting means inserted between said filter means and said collateral input;

a synchronization extractor connected to said amplitude demodulator for deriving from said baseband signal a local oscillation giving rise to sampling pulses and to timing pulses spaced from said sampling pulses;

a phase-error detector with input connections to said amplitude demodulator and to said synchronization extractor for monitoring polarity reversals of said baseband signal and determining the relative time positions of said timing pulses and of the instants of zero crossing during said polarity reversals, said phase-error detector having an output connection to said phase-shifting means for delivering thereto a corrective signal varying with said relative time positions to minimize spurious offsets between said carrier and said baseband signal; and



decoding means connected to said amplitude demodulator and controlled by said sampling pulses for converting said baseband signal into a binary pulse train.

4,272,846

METHOD FOR CANCELLING IMPULSIVE NOISE

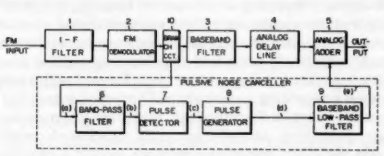
Takuro Muratani, Tokyo; Tatsuo Watanabe, Mitaka; Michihisa Ohkawa, and Takeshi Mizuike, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 4,989

Claims priority, application Japan, Feb. 1, 1978, 53-9230

Int. Cl.[3] H04B *1/10*

U.S. Cl. 455—296 **3 Claims**



1. A method for cancelling impulsive noise for a system of transmitting a band-limited baseband signal using a transmission channel having a transmission bandwidth larger than the bandwidth of the baseband signal, comprising the steps of: applying an out-band signal received outside of the frequency band of the baseband signal in a received signal to an impulse detector having a predetermined threshold level to detect the peak of an impulsive noise in the received out-band signal and to produce a detected impulsive noise output; generating a rectangular pulse having a duration determined according to the transmission bandwidth of the band-limited baseband signal and having a peak level determined according to the detected peak of the impulse noise; producing a pseudo noise pulse substantially equal in level but reverse in polarity to the impulsive noise from the detected impulsive noise output by passing said rectangular pulse through a baseband low-pass filter; and adding the pseudo noise pulse to the baseband signal, thereby to cancel the impulsive noise from the received signal.

DESIGN PATENTS

GRANTED JUN. 9, 1981

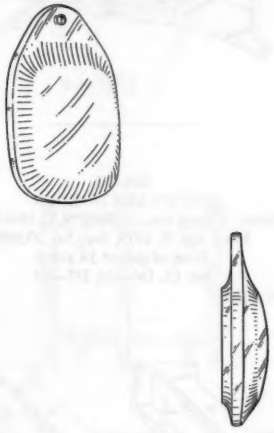
ERRATA

For CLASS	See PATENT NO.
D99-049	259,446
D03-035	259,450
D02-024	259,451

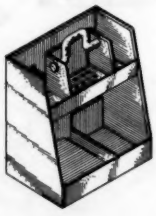
DESIGNS

JUNE 9, 1981

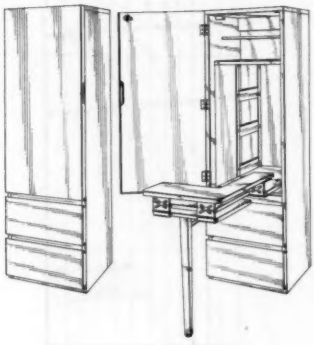
259,445
FOB FOR A KEY CHAIN OR THE LIKE
Thomas E. Clarke, Alton, Canada, assignor to Universal Polyquartz Inc.
Filed Apr. 30, 1979, Ser. No. 34,358
Claims priority, application Canada, Mar. 2, 1979, 0203791
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



259,446
TOOL CARRIER
Lyle L. Sullivan, 79 Elm St., Springville, N.Y. 14141
Filed Jul. 17, 1979, Ser. No. 58,314
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D99—49

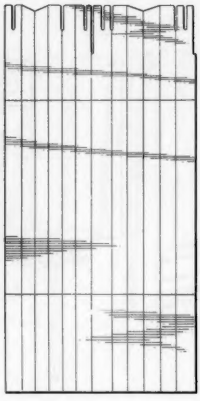


259,447
SEWING CABINET
Robert V. Haas, Edison, and Robert S. Peets, Island Heights, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Oct. 18, 1978, Ser. No. 952,876
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—40

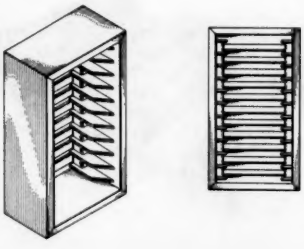


259,448
PICNIC TABLE
Gilles Maheu, 58 Jean Boisvert St., Lavaltrie, Canada (J0K 1H0)
Filed Jun. 14, 1978, Ser. No. 915,531
Claims priority, application Canada, Dec. 16, 1977, 1612771
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45

259,449
PRESCORED ASSEMBLY UNIT BLANK FOR DISPLAY STANDARD, OR SIMILAR ARTICLE
Ronald H. Taub, 1154 Sheridan Rd., Highland Park, Ill. 60035
Filed Jun. 21, 1978, Ser. No. 917,513
Term of patent 14 years
Int. Cl. 6—*06*
U.S. Cl. D6—85

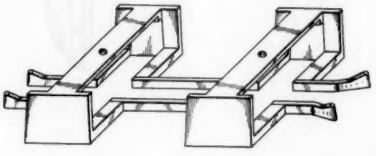


259,450
MAGNETIC CARTRIDGE HOLDER
Guy G. Veralrud, Canoga Park, Calif., assignor to Kustom Kreations, Inc., Northridge, Calif.
Filed Apr. 23, 1979, Ser. No. 32,374
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

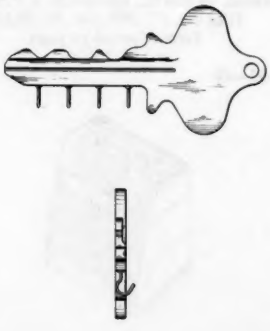


259,451
DESIGN FOR BRASSIERE
Peter R. Vale, 1010 Fifth Ave., New York, N.Y. 10028, assignor to Peter R. Vale and Pearl R. Vale, both of New York, N.Y.
Filed Dec. 3, 1979, Ser. No. 99,791
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

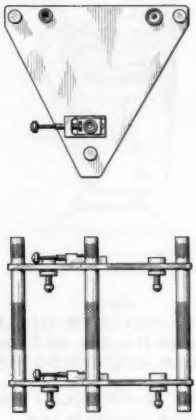
259,452
STEMWARE HOLDER
Louis Hoffman, 5 Ernst Dr., Suffern, N.Y. 10901
Filed Apr. 9, 1979, Ser. No. 27,989
Term of patent 14 years
Int. Cl. D6—*04*; D7—*99*
U.S. Cl. D6—113



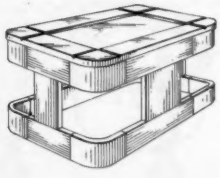
259,453
WALL MOUNTED RACK FOR KEYS
Stephen H. Warhaftig, 15 Avon Rd., New Rochelle, N.Y. 10804
Filed Mar. 29, 1979, Ser. No. 25,116
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114



259,454
MULTIPLE PROJECTOR REGISTRATION PLATFORM
Howard S. Gudgel, 7326 E. 59th Pl., Tulsa, Okla. 74145
Filed Feb. 27, 1978, Ser. No. 881,870
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—145

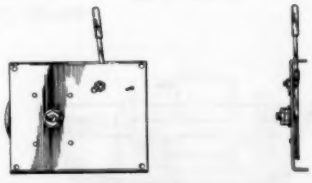


259,455
TABLE
Richard G. Brown, High Point, N.C., assignor to Null Manufacturing Corporation, Maiden, N.C.
Filed Apr. 16, 1979, Ser. No. 30,135
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

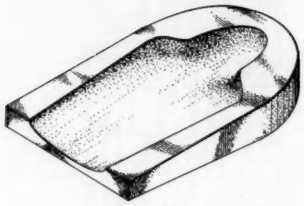


259,456
MAGAZINE RACK
Walter Zeischegg, Neu-Ulm, and Bernd Brüssing, Ulm, both of Fed. Rep. of Germany, assignors to Hans Friedrich Hefendehl, Kierspe, Fed. Rep. of Germany
Filed Aug. 15, 1978, Ser. No. 933,919
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, MR 512
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

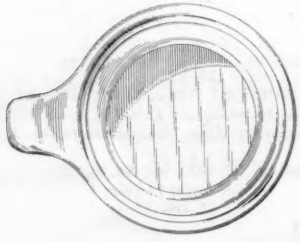
259,457
SWIVEL SUPPORT FOR A VEHICLE SEAT
Gordon W. Smith, Dunwoody, and Terrell E. Ayers, Mableton, both of Ga., assignors to Ayers Manufacturing Corp., Atlanta, Ga.
Filed Apr. 25, 1979, Ser. No. 33,137
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—191

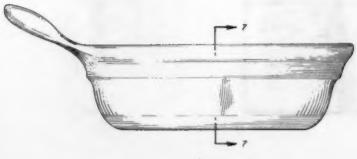


259,458
SUPPORT PAD FOR AN INFANT
Charles R. Fuller, and John P. Fuller, both of 15164 Stagg St., Van Nuys, Calif. 91405
Filed Jun. 9, 1978, Ser. No. 914,240
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—201



259,459
CASSEROLE DISH OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y., and Stanley F. Campion, executor, Fayetteville, N.Y., assignors to Syracuse China Corporation, Syracuse, N.Y.
Filed May 11, 1979, Ser. No. 38,244
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—20



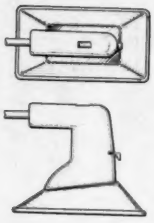


259,460
MEASURING CUP SET OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. de Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 27, 1978, Ser. No. 890,348
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—50

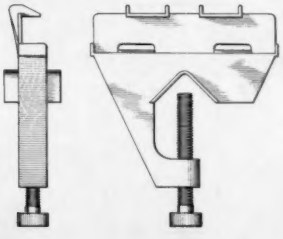
259,461
MEASURING CUP OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. de Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 27, 1978, Ser. No. 890,351
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—50

259,462
MEASURING CUP OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. de Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 27, 1978, Ser. No. 890,352
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—50

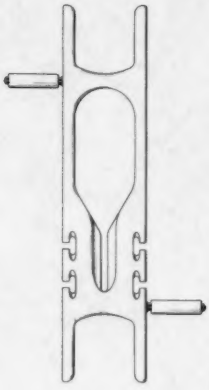
259,463
CARPET DESIGNER'S IRON
John Szymanski, 1728 12th Crt. North, Lake Worth, Fla. 33460
Filed May 16, 1979, Ser. No. 39,277
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—203



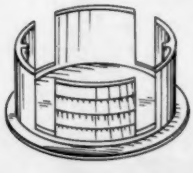
259,464
MANIFOLD HOLDER
Hyman W. Paley, 20 Broadmoor Dr., San Francisco, Calif. 94132
Filed Dec. 14, 1978, Ser. No. 969,410
Term of patent 14 years
Int. Cl. D8—*05, 08*
U.S. Cl. D8—72



259,465
EXTENSION CORD REEL
Melvin F. Weii, Evansville, Ind., assignor to Liblem Corporation, Evansville, Ind.
Filed Aug. 16, 1979, Ser. No. 67,094
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D8—359



259,466
INSULATION INJECTION HOLE PLUG
R. Dean Doonan, 101 Sunnyside Dr., Montezuma, Iowa 50171
Filed Jul. 28, 1978, Ser. No. 929,211
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—499



259,467

DISPENSING CONTAINER FOR FLUIDS

Jack Halbeisen; Peter A. Basile, both of Hudson, and Carl E. Bochmann, Brecksville, all of Ohio, assignors to The Clorox Company, Oakland, Calif.

Filed Jul. 21, 1978, Ser. No. 927,112

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—300

259,468

DISPLAY CONTAINER

Michael P. Patterson, Oshkosh, Wis., and William H. Perkins, Oxford, Ohio, assignors to Paragon Candles, Inc., Oshkosh, Wis.

Filed Oct. 16, 1978, Ser. No. 951,857

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—415

259,469

CARTON

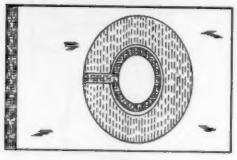
Adam J. Grodin, Forrest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,470

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—432



259,470

CARTON

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

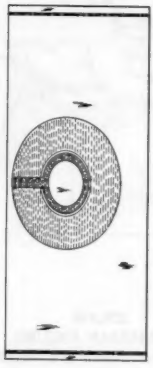
Filed Sep. 21, 1978, Ser. No. 944,471

Term of patent 14 years

Int. Cl. D9—*03*

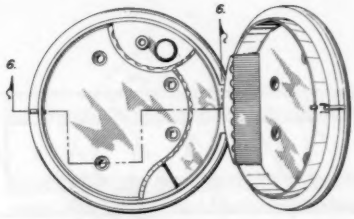
U.S. Cl. D9—432

259,471
CARTON
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,472
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432



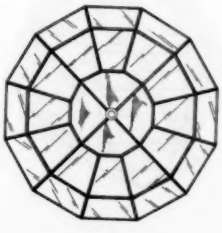
259,472
CARTON
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,476
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432

259,473
CONTAINER FOR TOYS OR SIMILAR ARTICLE
Seiko Konya, Monterey Park; Janice E. Rosenthal, Manhattan Beach, and Virginia R. Sargent, Hermosa Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 5, 1979, Ser. No. 17,221
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—420

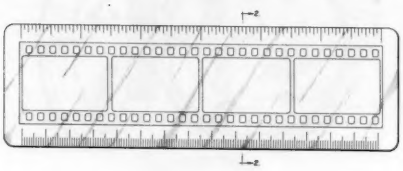


259,474
CLOCK HOUSING
Jack V. Miller, 700 Auburn, Sierre Madre, Calif. 91024
Filed Jul. 28, 1978, Ser. No. 929,019
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1

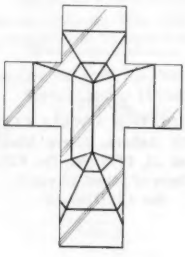
259,475
HOUSING FOR A WALL CLOCK
Jack V. Miller, 700 Auburn, Sierre Madre, Calif. 91024
Filed Jul. 31, 1978, Ser. No. 929,554
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1

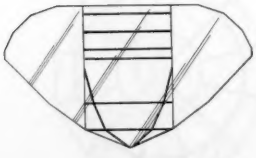


259,476
RULER
Irene B. Feingold, and Stanley Z. Feingold, both of 420 Pitts Colony Dr., Rochester, N.Y. 14623
Filed Jul. 9, 1979, Ser. No. 55,831
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

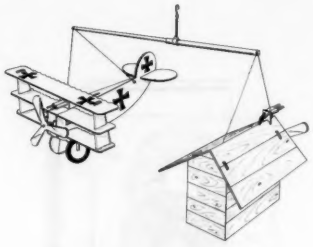


259,477
DIAMOND
Benayahu L. Najjar, 104-20 Queens Blvd., Forest Hills, N.Y. 11375
Filed Nov. 2, 1978, Ser. No. 957,241
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—90



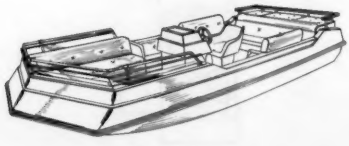


259,478
SIMULATIVE TOY MOBILE
Robert R. Schoch, 517 Otteray Dr., High Point, N.C. 27260
Filed Jun. 26, 1978, Ser. No. 919,367
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—141

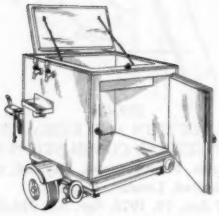


259,479
HORSEMAN FIGURE
Charles A. MacLean, 23073 Beech Ave., Dearborn, Mich. 48124
Filed Apr. 27, 1979, Ser. No. 33,869
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—159

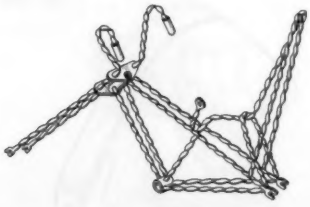
259,480
COMBINED UPPER HULL AND BOAT INTERIOR
Charles Bednar, Oak Park, Ill., assignor to Viking Boat Company, Inc., Middlebury, Ind.
Filed Dec. 5, 1978, Ser. No. 966,764
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—318



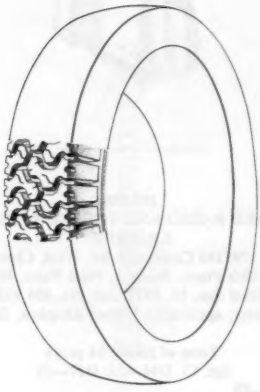
259,481
BEVERAGE COOLER AND DISPENSING TRAILER
Christopher Kappos, Cambridge, Iowa 50046
Filed Sep. 14, 1978, Ser. No. 942,409
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



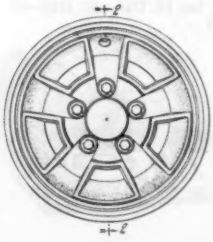
259,482
BICYCLE FRAME
Paul G. Terrazas, 45280 Kings St., Indio, Calif. 90212, and Robert Terrazas, 2012 Nile St., Bakersfield, Calif. 93305
Filed Dec. 21, 1978, Ser. No. 967,891
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



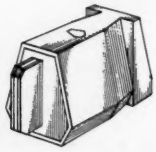
259,483
PNEUMATIC TIRE TREAD AND BUTTRESS
Carl F. Smajd, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Mar. 8, 1979, Ser. No. 18,486
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



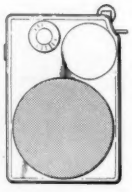
259,484
VEHICLE WHEEL
Edward T. Welburn, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 24, 1979, Ser. No. 42,064
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



259,485
ELECTRICAL CONNECTOR
Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.
Filed Mar. 23, 1979, Ser. No. 23,331
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



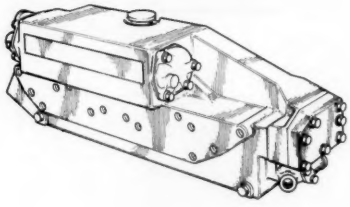
259,486
COMBINED RADIO AND TOBACCO PRODUCTS LIGHTER
Hoi T. Vong, 179/180 Connaught Rd. West, Cheung Ka Industrial Bldg., 19th Floor, Block A, West Point, Hong Kong
Filed Jun. 15, 1977, Ser. No. 806,933
Claims priority, application United Kingdom, Dec. 17, 1976, 978,320/76
Term of patent 14 years
Int. Cl. D14—*03;* D27—*05*
U.S. Cl. D14—68



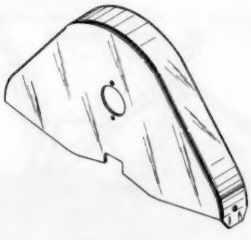
259,487
COMBINED CLOCK RADIO AND TELEVISION RECEIVER
Naoki Wada; Tomitaro Saito; Seiji Usami; Kazuo Kawabe, and Koji Satake, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Aug. 3, 1978, Ser. No. 930,738
Claims priority, application Japan, Feb. 2, 1978, 53-4701
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73

259,488
BOAT PROPELLING UNIT
Leslie G. Carter, 15420 Tiger Bend Rd., and Warren A. Coco, 5848 Stumberg La., both of Baton Rouge, La. 70816
Filed Jun. 5, 1978, Ser. No. 912,936
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D15—4

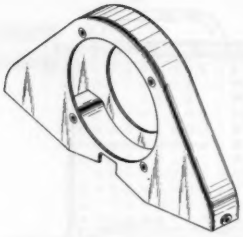
259,489
COMBINED INDUCTION AND EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE
Frederik J. Herenius, Peterborough, England, assignor to Perkins Engines Limited, London, England
Filed Jun. 19, 1978, Ser. No. 916,671
Claims priority, application United Kingdom, Dec. 22, 1977, 982715/77
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



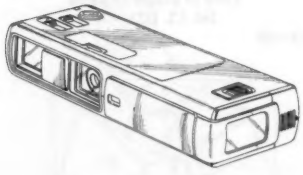
259,490
FAN HOUSING FOR AN AIR COOLED ENGINE
James J. Feuling, 686 Ash Ave., Chula Vista, Calif. 92010
Filed Nov. 9, 1978, Ser. No. 959,430
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



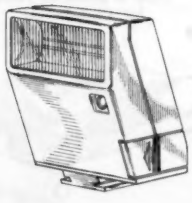
259,491
FAN HOUSING FOR AN AIR COOLED ENGINE
James J. Feuling, 686 Ash Ave., Chula Vista, Calif. 92010
Filed Aug. 17, 1979, Ser. No. 67,401
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



259,492
STILL CAMERA WITH INTEGRAL FLASH
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 30, 1978, Ser. No. 958,841
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06

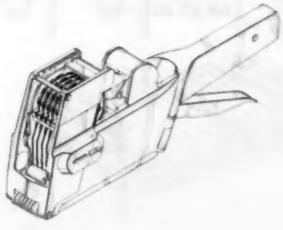


259,493
ELECTRONIC FLASH DEVICE
Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.
Filed Sep. 18, 1978, Ser. No. 943,346
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

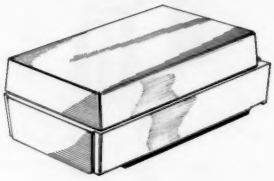


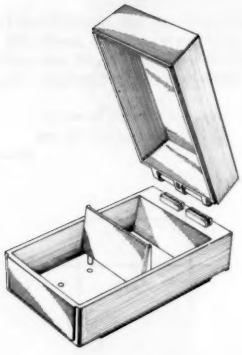
259,494
BASS GUITAR
Charles H. Todd, III, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed Dec. 19, 1979, Ser. No. 105,164
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

259,495
LABELER
Tokio Wada, Nagarayamashi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Tokyo, Japan
Filed Nov. 28, 1978, Ser. No. 964,437
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—19

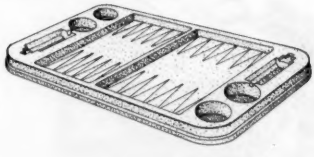


259,496
BUSINESS CARD FILE
James F. Hampshire, Stephens City, and Greg P. Terek, Winchester, both of Va., assignors to Rubbermaid Commercial Products Inc.
Filed Jul. 26, 1978, Ser. No. 928,185
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

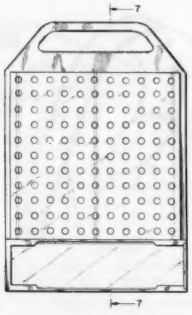




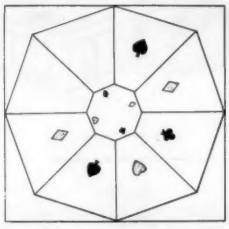
259,497
FLOATING GAME BOARD
Kenneth Mahler, Cincinnati, Ohio, assignor to The Sunfloat Company, Cincinnati, Ohio
Filed Mar. 16, 1979, Ser. No. 20,992
Term of patent 14 years
Int. Cl. D21—*08*
U.S. Cl. D21—16



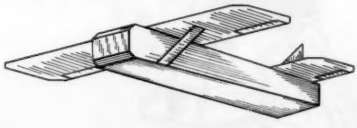
259,498
PEG GAME CHEST
Frederick H. Kroll, 72 Wood Hollow La., New Rochelle, N.Y. 10804
Filed May 16, 1979, Ser. No. 39,255
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17



259,499
BOARD FOR A GAME
Alan G. A. Dunham, 74 Abbots Way, Beckenham, Kent, and Stanley Crichton, 87 Lennards Rd., Penge, London SE. 20, both of England
Filed Jul. 30, 1979, Ser. No. 62,094
Claims priority, application United Kingdom, Feb. 9, 1979, 988488/79
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—26

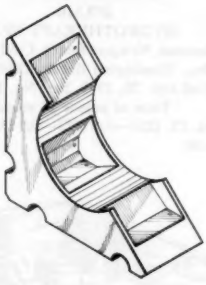


259,500
PLANE KITE
Bernard R. Barrett, 308 W. Graham St., Lombard, Ill. 60148
Filed Oct. 23, 1978, Ser. No. 953,419
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88

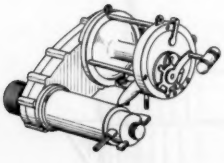


259,501
TRAINING BAT
William F. Salisbury, 264 E. 700 South, Springville, Utah 84663
Filed Mar. 19, 1979, Ser. No. 21,708
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—211

259,502
PLAY SCULPTURE FOR PLAYGROUND APPARATUS
Richard M. Keenan, Kent County, and Robert Blaszczyk, Grand Rapids, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Mar. 5, 1979, Ser. No. 17,499
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



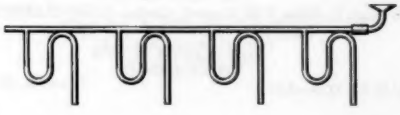
259,503
ELECTRIC FISHING REEL
Peck T. Huffman, Greensboro, N.C., assignor to Electric Fishing Reel Systems, Inc., Greensboro, N.C.
Filed Jul. 31, 1979, Ser. No. 62,496
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



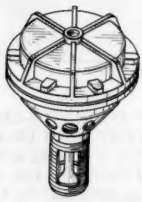
259,504
FISHING LURE
Paul C. Lott, R. 4, Brookwood Dr., Owensboro, Ky. 42301
Filed Aug. 3, 1979, Ser. No. 63,589
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

259,505
COMBINED NARROW BODY SELF-RIGHTING SINKER AND LURE SUPPORT WITH TRAILING LEGS
Robert J. Dickinson, 501 S. Wisconsin, and James L. Wagner, 515 E. Fourth, both of Mitchell, S. Dak. 57301
Filed Jun. 6, 1979, Ser. No. 45,995
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

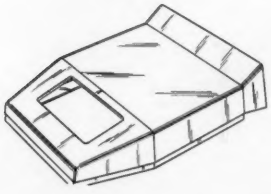
259,506
FILLER FOR LIQUID CONTAINERS
Nils Nygards, 7435 Highway 65 Northeast, Minneapolis, Minn. 55432
Filed Dec. 29, 1978, Ser. No. 974,535
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



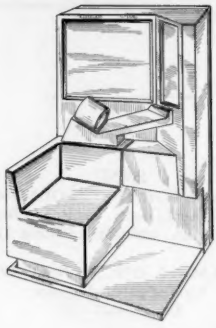
259,507
TUBOCHARGER BY-PASS VALVE
Hugh MacInnes, La Canada, and Robert A. Keller, Westlake Village, both of Calif., assignors to Roto-Master, Inc., North Hollywood, Calif.
Filed Sep. 15, 1978, Ser. No. 943,350
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



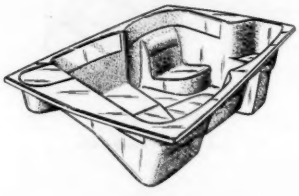
259,508
AIR VENT COVER
William E. Giles, 9782 Central, Garden Grove, Calif. 92644
Filed Dec. 18, 1978, Ser. No. 970,200
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153



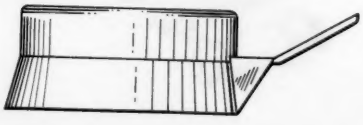
259,509
ENCLOSURE FOR BODY DATA MONITORING APPARATUS
Herbert H. Loeffler, Arlington, and James S. MacConkey, Winchester, both of Mass., assignors to Gulf & Western Manufacturing Company, New York, N.Y.
Filed May 1, 1980, Ser. No. 145,520
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



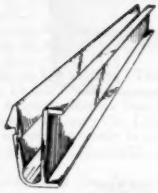
259,510
HYDROTHERAPY SPA
Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Inc., Huntington Beach, Calif.
Filed Feb. 20, 1980, Ser. No. 123,081
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



259,511
SPECIMEN COLLECTION SKIRT
James J. Peterson, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Sep. 15, 1978, Ser. No. 942,501
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



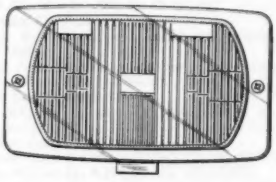
259,512
MOULDING FOR FITTING AN ANTI-DAZZLER SCREEN OR A LOUVRE TO A LAMP FITTINGS
Jan-Ake Hallen, Brinketorpsvägen 3, Partille, Sweden (433 02)
Filed Apr. 13, 1979, Ser. No. 29,876
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



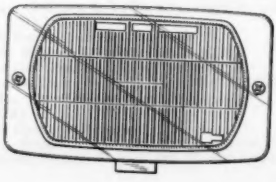
259,513
UTILITY POLE
William J. Whatley, 1300 Greenmeadow La., Littleton, Colo. 80121
Filed May 7, 1979, Ser. No. 36,827
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—77

259,514
DECORATIVE LAMP
James D. Welch, 10328 Pinehurst Ave., Omaha, Nebr. 68124
Filed Sep. 1, 1978, Ser. No. 939,170
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—26

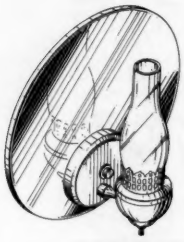
259,515
HEADLIGHT
Pierre Catte, Sevres, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Jun. 8, 1979, Ser. No. 46,728
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



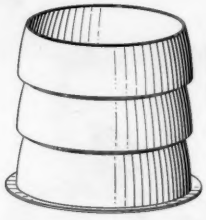
259,516
HEADLIGHT
Pierre Catte, Sevres, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Jun. 8, 1979, Ser. No. 46,729
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



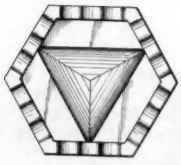
259,517
COMBINED ELECTRIC LAMP AND MIRROR
John F. Dobrowski, 28 N. Date, Mesa, Ariz. 85201
Filed Oct. 30, 1978, Ser. No. 955,883
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—56

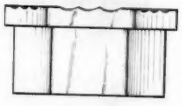


259,518
LIGHT REFLECTOR
Octavio G. Garcia, Prairie Village, Kans., and Peter A. Lambert, Excelsior Springs, Mo., assignors to Devine Lighting, Incorporated, Kansas City, Mo.
Filed Apr. 16, 1979, Ser. No. 29,976
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—131



259,519
ASHTRAY
Alf B. Magnusson, Göteborg, Sweden, assignor to Bengt Petersson New Products Investment AB, Göteborg, Sweden
Filed Feb. 28, 1978, Ser. No. 882,066
Claims priority, application Sweden, Aug. 29, 1977, 771709
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—28





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Aukra Bruk: *See*—
Korsvik, Nils, 4,271,553, Cl. 9-14.000.

A/S Blehr Og Tenvig: *See*—
Korsvik, Nils, 4,271,553, Cl. 9-14.000.

Abate, Giorgio, to Solai Vignola di Faviani Orlando ec Societa. Slip form for building components. 4,272,230, Cl. 425-64.000.

Abbott Laboratories: *See*—
Carney, Ronald E.; and McAlpine, James B., 4,272,626, Cl. 536-17.00R.
Kim, Yung D.; Tomita, Joseph T.; and Schenck, Jay R., 4,272,504, Cl. 424-1.000.
Von Esch, Anne M.; Thomas, Alford M.; Fairgrieve, John S.; and Seely, John H., 4,272,528, Cl. 424-211.000.

Abe, Masahiro: *See*—
Fukuda, Shuzo; Watanabe, Tsutomu; and Abe, Masahiro, 4,272,334, Cl. 204-27.000.

Abe, Shunichi; Akiyama, Mistuo; Iwai, Fumio; and Kuru, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Apparatus for controlling the density of a reproduced image in an electrophotographic copying machine. 4,272,182, Cl. 355-14.00D.

Abe, Zenuemon: *See*—
Wada, Tatsuhiko; and Abe, Zenuemon, 4,272,724, Cl. 324-253.000.

ACF Industries, Incorporated: *See*—
Ruth, Harvey L.; and Phelan, Michael B., 4,272,458, Cl. 261-23.00A.
Wempe, Richard J.; and Behle, Gunter R., 4,272,053, Cl. 251-144.000.

Acker, G. Marts: *See*—
Moshofsky, Jerome F., 4,272,002, Cl. 227-19.000.

Acla-Werke Aktiengesellschaft: *See*—
Klein, Wolfgang, 4,271,932, Cl. 187-95.000.

Adams, Robert M. Vehicle cover assembly. 4,272,119, Cl. 296-100.000.

Adell, Robert, to U.S. Product Development Company. Molding for vehicle door edges. 4,271,633, Cl. 49-462.000.

Advanced Marine Concepts, Inc.: *See*—
Chandler, Roy L., 4,271,549, Cl. 9-2.00S.

Advanced Micro Devices, Inc.: *See*—
Wong, Thomas S., 4,272,811, Cl. 365-190.000.

Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer: *See*—
Schuler, Martin, 4,271,837, Cl. 128-303.140.

Afanasiev, Mikhail M.; Ivanov, Nikolai A.; Konstantinov, Evgeny A.; and Makarov, Valery A. Device for adjusting an inertia cone crusher discharge gap. 4,272,030, Cl. 241-37.000.

Ag-Team, Inc.: *See*—
Frye, John V., 4,271,912, Cl. 172-441.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Chedid, Louis; Choay, Jean; Lederer, Edgar; Lefrancier, Pierre; Parant, Monique; and Parant, Francine, 4,272,524, Cl. 424-177.000.
Duchene, Georges, 4,271,826, Cl. 126-450.000.

Agency of Industrial Science and Technology: *See*—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,272,464, Cl. 264-22.000.
Asai, Michihiko; Tsuda, Keishiro; and Okada, Akira, 4,272,559, Cl. 427-54.100.
Ichimura, Kunihiro, 4,272,620, Cl. 525-61.000.
Matsuda, Kiyofumi, 4,272,192, Cl. 356-347.000.

AGFA-Gevaert, A.G.: *See*—
Stemme, Otto; and Staudacher, Frank A., 4,272,602, Cl. 430-140.000.

Agrawal, Bhagwati P.; and Shenoi, Kishan, to International Telephone and Telegraph Corporation. Gain control apparatus for digital telephone line circuits. 4,272,648, Cl. 179-1.0VL.

Ahlstone, Arthur G., to Vetco, Inc. Ring gasket retainer for flanged connectors. 4,272,109, Cl. 285-336.000.

Ahlstrom, Ross C., Jr.; and Meppen, Craig E., to Dow Chemical Company, The. System and method for providing a vapor phase sample for analysis. 4,272,481, Cl. 422-62.000.

Ahmed, Myrna M.: *See*—
Ahmed, Nazeer; and Ahmed, Myrna M., 4,271,790, Cl. 122-26.000.

Ahmed, Nazeer; and Ahmed, Myrna M. Method of heating water using wind energy and apparatus therefor. 4,271,790, Cl. 122-26.000.

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Daniel, Chelliah, 4,272,408, Cl. 252-437.000.
Hvizdos, Leonard J., 4,271,676, Cl. 62-55.000.

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Mitsuda, Tadao; Iwata, Minoru; Sugiura, Masatoshi; Takada, Shigetaka; and Watanabe, Yukihiro, 4,271,667, Cl. 60-276.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Mori, Keiji, 4,272,123, Cl. 296-222.000.
Ohmi, Atsushi, 4,271,670, Cl. 60-554.000.

Akimura, Yoshitaka: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Fuseya, Yoshiharu, 4,272,606, Cl. 430-264.000.

Akiyama, Mistuo: *See*—
Abe, Shunichi; Akiyama, Mistuo; Iwai, Fumio; and Kuru, Hiroshi, 4,272,182, Cl. 355-14.00D.

Akiyama, Shinichi: *See*—
Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Akiyama, Shinichi, 4,272,637, Cl. 568-780.000.

Akiyama, Takayasu: *See*—
Yamazaki, Masahiro; Akiyama, Takayasu; Makuta, Yoshihiro; and Maruoka, Tosikuni, 4,271,740, Cl. 83-592.000.

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Gerlach, Klaus; and Wick, Gerhard, 4,272,377, Cl. 210-321.300.

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Genini, Graziano, 4,271,873, Cl. 139-446.000.

Alberta Oil Sands Technology and Research Authority: *See*—
Redford, David A.; and Hanna, Mohsen R., 4,271,905, Cl. 166-263.000.

Alberts, Terrance M. Motorboat transom protector. 4,271,548, Cl. 9-1.500.

Albrecht, Allan J., to J. I. Case Company. Floating soil fracture tool. 4,271,614, Cl. 37-103.000.

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Lasner, Jeffrey I.; and Aleixo, Francisco H., 4,271,838, Cl. 128-318.000.

Alexander, Jerry L., to Minnesota Mining and Manufacturing Company. DC Power supply for high power discharge devices. 4,272,704, Cl. 315-205.000.

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Jeppsson, Erik H. O., 4,271,860, Cl. 137-240.000.

Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf. D-Homosteroids. 4,272,630, Cl. 560-6.000.

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Roberts, Stanley M., 4,272,629, Cl. 549-11.000.

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Grenell, David, 4,271,554, Cl. 10-152.00T.

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Hertzog, Richard R.; and Zudkevitch, David, 4,272,326, Cl. 203-62.000.
Walling, John C.; Morris, Robert C.; Peterson, Otis G.; and Jenssen, Hans P., 4,272,733, Cl. 331-94.50F.

Allied Paper Incorporated: *See*—
Shaw, Michael J.; and Thiessen, Robert J., 4,272,569, Cl. 427-336.000.

Allis-Chalmers Corporation: *See*—
Ballendux, Gerardus M., 4,271,942, Cl. 192-48.910.
Ryczek, William G., 4,271,850, Cl. 130-27.0JT.
Wheeler, Keith A.; and Hastings, Dawson W., 4,271,913, Cl. 172-633.000.

Allison, Ralph E., to BMI Inc. Gunning apparatus for in situ spraying of refractory material. 4,272,020, Cl. 239-8.000.

Aloup, Jean-Claude; Bouchaudon, Jean; Farge, Daniel; and James, Claude, to Rhone-Poulenc Industries. 2-(Pyrid-2-yl)tetrahydrothiophene derivatives. 4,272,534, Cl. 424-248.510.

Altman, Donna G., to Solid Safety, Inc. Fire lighting device. 4,272,252, Cl. 44-40.000.

Amano, Takayoshi: *See*—
Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Nakamura, Mitsuo; and Amano, Takayoshi, 4,272,003, Cl. 228-13.000.

Ambico Inc.: *See*—
Stravitz, David M., 4,271,999, Cl. 224-257.000.

Amemiya, Norio: *See*—
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,272,597, Cl. 430-68.000.

American Air Filter Company, Inc.: *See*—
Britt, Monroe; and Westlin, Karl L., 4,272,262, Cl. 55-302.000.
Hancock, Terence M., 4,272,263, Cl. 55-377.000.
Kamps, Grietinus R. L.; Moltzer, Jan S. P.; and Platteeuw, Pieter J., 4,272,267, Cl. 55-499.000.

American Brands, Inc.: *See*—
Glock, Eugene, 4,271,852, Cl. 131-292.000.

American Can Company: *See*—
Blakeslee, Harry N., 4,272,567, Cl. 427-236.000.
Collins, Floyd A.; and Spychalski, Joseph L., 4,271,777, Cl. 113-1.00G.

American Cyanamid Company: *See*—
Blank, Werner J., 4,272,590, Cl. 428-460.000.
Shepherd, Robert G., 4,272,546, Cl. 424-310.000.

American Fire and Industrial Products Company: *See*—
Chatfield, John F., Jr.; Bryant, Donald C.; Daly, James C.; and Kamila, Friedolf, 4,271,909, Cl. 169-70.000.

American Home Products Corporation: *See*—
Yardley, John P.; and Corbin, Alan, 4,272,432, Cl. 260-112.50R.

American Optical Corporation: *See*—
Hamilton, W. Duane, 4,271,636, Cl. 51-33.00W.

AMF Incorporated: *See*—
Grosser, Richard W.; and Long, Virgil L., Sr., 4,272,073, Cl. 272-111.000.

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AMPCO Foods, Inc.: *See*—
Shatila, Mounir A.; and Von Der Lieth, William H., 4,272,556, Cl. 426-453.000.

Analytical Systems, Inc.: *See*—
Jones, Donald W., 4,272,380, Cl. 210-658.000.

Anchor Coupling Co., Inc.: *See*—
Gunning, David W., 4,271,576, Cl. 29-237.000.

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Lyng, Stig, 4,272,577, Cl. 428-112.000.

Andersen, John V. Apparatus for dispensing a fluent substance from a flexible container disposed between a pair of opposed plates. 4,271,985, Cl. 222-96.000.

Anderson, David K. C.: *See*—
Jackson, Peter W.; Anderson, David K. C.; and Cleland, David B., 4,272,005, Cl. 228-107.000.

Anderson, John A., to British Gas Corporation. Slag tap for coal slagging gasifier. 4,271,993, Cl. 222-591.000.

Anderson, Laurence L.: *See*—
Zapf, Richard L., 4,272,142, Cl. 339-29.00B.

Andersson, Alf H.; and Glifberg, Nils B., to Svenska Sockerfabriks AB. Machine for harvesting the foliage of row crops. 4,271,662, Cl. 56-121.440.

Ando, Toshihiro; Ohgi, Hiroshi; and Kishi, Ikuji, to Denki Kagaku Kogyo Kabushiki Kaisha. Laminated glass product. 4,272,586, Cl. 428-419.000.

Andrzejewski, Heinz, to Draftex Development. Channel-shaped sealing strips. 4,271,634, Cl. 49-491.000.

Angelchik, Jean P. Method for prevention of gastro esophageal reflux. 4,271,827, Cl. 128-1.00R.

Angelchik, Jean P. Method for maintaining the reduction of a sliding esophageal hiatal hernia. 4,271,828, Cl. 128-1.00R.

Anheuser-Busch, Incorporated: *See*—
Zastrow, Klaus D., 4,272,552, Cl. 426-13.000.

Ansen, Jakob: *See*—
Duill, Helmut; and Ansen, Jakob, 4,272,710, Cl. 318-470.000.

Anson Engineering Pty. Ltd.: *See*—
Thomas, Donald G., 4,271,598, Cl. 33-293.000.

Aoki, Tsunetaka, to Yoshida Kogyo K.K. Automatic lock slider for slide fastener. 4,271,567, Cl. 24-205.14R.

Aoyama, Takaaki: *See*—
Togashi, Seigo; Suzuki, Takaharu; and Aoyama, Takaaki, 4,272,162, Cl. 350-349.000.

Arai, Hajime, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission equipped with auxiliary speed changing gear. 4,271,715, Cl. 74-360.000.

Arai, Hideaki: *See*—
Tokura, Hiroshi; Sato, Keiji; Tomono, Makoto; Terada, Sadatugu; and Arai, Hideaki, 4,272,601, Cl. 430-108.000.

Arai, Toshio; Nagasawa, Takeshi; Iwaya, Toshio; Inoue, Shunzo; and Konishi, Motofumi, to Canon Kabushiki Kaisha. Photographic apparatus. 4,272,185, Cl. 355-28.000.

Arakawa, Hideo: *See*—
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.

Archer, Farley J. Ocean crab trap. 4,271,625, Cl. 43-87.000.

Ariga, Kazuo: *See*—
Teshima, Toru; Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,272,702, Cl. 313-493.000.

Arikawa, Junichi: *See*—
Yoshida, Minoru; and Arikawa, Junichi, 4,272,067, Cl. 271-95.000.

Armstrong Cork Company: *See*—
Johnson, Norman A.; and Kent, Raymond C., 4,272,668, Cl. 219-375.000.

Arndt, Emanuel: *See*—
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, 4,272,242, Cl. 8-94.150.

Asahi Glass Company, Ltd.: *See*—
Jizaimaru, Tanzo; Tanaka, Hideya; and Sajima, Yasuo, 4,272,352, Cl. 204-279.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okura, Zenichi, 4,272,175, Cl. 354-274.000.

Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, to Agency of Industrial Science and Technology; and Shin-Etsu Chemical Co., Ltd. Method for preventing plasticizer bleeding on polyvinyl chloride shaped articles. 4,272,464, Cl. 264-22.000.

Asai, Michihiko; Tsuda, Keishiro; and Okada, Akira, to Agency of Industrial Science and Technology; and Ministry of International Trade & Industry. Method for surface treatment of shaped articles of polyvinyl chloride resins. 4,272,559, Cl. 427-54.100.

Asakawa, Tatsushi: *See*—
Morozumi, Shinji; and Asakawa, Tatsushi, 4,272,840, Cl. 368-202.000.

Asano, Kazuhiro: *See*—
Ueda, Makoto; Torisawa, Akira; Satoh, Katsuhiko; Shida, Masaharu; Mandai, Masaaki; and Asano, Kazuhiro, 4,272,837, Cl. 368-80.000.

Asatourian, Rolin K. Safe-speed indicator system. 4,272,800, Cl. 362-242.000.

ASEA Aktiebolag: *See*—
Classon, Ake, 4,272,642, Cl. 174-31.00R.

Ateliers de la Motobecane: *See*—
Jaulmes, Christian, 4,271,690, Cl. 70-233.000.

Atlantic Richfield Company: *See*—
Beckberger, LaVern H.; and Barbour, James L., 4,272,251, Cl. 44-1.0SR.
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,272,250, Cl. 44-1.0SR.

Ato Chimie: *See*—
Poisson, Pierre; and Sturtz, Georges, 4,272,457, Cl. 260-953.000.

Aubriot, Jean L. C., to Virax. Pipe-cutter with interchangeable chains. 4,271,591, Cl. 30-100.000.

Auger, Bertrand Y., to Minnesota Mining and Manufacturing Company. Copy sheet. 4,272,106, Cl. 282-27.500.

Austin, Oliver K., to Phillips Petroleum Company. Carbon black reactor with inner and outer hot combustion gas entries providing protective blanket and extra hot gases for conversion of feed. 4,272,487, Cl. 422-150.000.

Automation Industries, Inc.: *See*—
Timmons, David R., 4,271,751, Cl. 98-40.00D.

Automobiles Peugeot: *See*—
Barthelemy, Andre J., 4,271,920, Cl. 180-55.000.
Chambon, Andre F., 4,272,101, Cl. 280-692.000.
Etienne, Michel, 4,272,716, Cl. 320-14.000.

Automotive Products Limited: *See*—
Young, Alastair J., 4,272,132, Cl. 303-22.00R.

Auvil, Steven R.; and Penquite, Charles R., to Monsanto Company. Process for preparing acetonitrile. 4,272,452, Cl. 260-465.100.

Auvil, Steven R.: *See*—
Gambell, James W.; and Auvil, Steven R., 4,272,451, Cl. 260-465.100.

Avco Corporation: *See*—
Hurley, John F.; and Hoffman, Paul L., 4,271,666, Cl. 60-226.00R.

AVM Corporation: *See*—
Stark, Forest G., 4,272,138, Cl. 312-221.000.

Azuma, Koji: *See*—
Kitamura, Hajime; Kurimoto, Kazuhiko; and Azuma, Koji, 4,272,424, Cl. 260-29.6RW.

B. F. Goodrich Company, The: *See*—
Miller, James R.; and Leeson, Edward J., 4,272,425, Cl. 260-29.7PT.

Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, to GNS Gesellschaft fur Nuklear-Service mbH; and Rheinisch-Westfalisches Elektrizitatswerk. Transport and storage vessel for radioactive materials. 4,272,683, Cl. 250-507.000.

Baba, Sadaaki: *See*—
Hotta, Shigenori; and Baba, Sadaaki, 4,272,750, Cl. 337-1.000.

Babcock & Wilcox Company, The: *See*—
Bey, Roger, 4,271,866, Cl. 137-625.300.

Babler, Fridolin, to Ciba-Geigy Corporation. Process for conditioning a pigment in liquid ammonia. 4,272,298, Cl. 106-309.000.

Bacal, Kazimierz; and Wierusz, Lech, to Wyzsza Szkola Inzynierska Im. Jurija Gagarina. Appliance for correction of spinal curvatures. 4,271,836, Cl. 128-303.00R.

Bachel, Ernst, to Siemens Aktiengesellschaft. Connecting plug for detachably connecting two light wave guide cables. 4,272,154, Cl. 350-96.220.

Bachmann, Willi; Thielemann, Klaus; and von der Wall, Klaus, to Continental Gummi-Werke Aktiengesellschaft. Tread for radial tires of trucks and similar vehicles. 4,271,886, Cl. 152-209.00R.

Baczek, Stanley K.; and McCain, G. Howard, to Diamond Shamrock Corporation. Method of depositing cation exchange membrane on a foraminous cathode. 4,272,560, Cl. 427-58.000.

Baer, Ted A.: *See*—
Kohn, Gustave K.; and Baer, Ted A., 4,272,449, Cl. 260-453.990.

Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., to Eastman Kodak Company. Nondiffusible compounds having a releasable azo dye moiety. 4,272,434, Cl. 260-156.000.

Bailey, Joseph: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,272,434, Cl. 260-156.000.

Bailey, Paul W., to Hewlett-Packard Company. Output capacitor discharge circuit. 4,272,717, Cl. 323-226.000.

Bailey, Theodore B.; and Bates, Jack, to United States of America, Navy. Electro-optical projectile analyzer. 4,272,189, Cl. 356-28.000.

Baker, William E. Apparatus for treating wastewater. 4,272,374, Cl. 210-180.000.

Balasubramanian, N. Apparatus for optical scanning. 4,272,151, Cl. 350-6.600.

Balazs, Endre A. Method for stimulating phagocytic activity and synergistic compositions therefor. 4,272,522, Cl. 424-94.000.

Balck, Lars, Jr., to Crom Corporation, The. Prestressed concrete tanks with shear blocks for resisting shearing forces. 4,271,647, Cl. 52-169.400.

Balducci, Luigi; and Rustioni, Massimo, to Montedison S.p.A. New inorganic pigments and process for their preparation. 4,272,296, Cl. 106-288.00B.

Balke, Fred W.: *See*—
Bauer, Andrew J., Jr.; and Doering, John N., 4,272,212, Cl. 404-72.000.

Balle, Gerhard; Rabe, Hansjurgen; and Vehlewald, Peter, to Bayer Aktiengesellschaft. Process for the production of modified polyether polyols and their use in processes for the production of polyurethane plastics. 4,272,619, Cl. 521-169.000.

Ballendux, Gerardus M., to Allis-Chalmers Corporation. Two-speed power take-off. 4,271,942, Cl. 192-48.910.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Manville Forest Products. One-piece double depth shipping container. 4,272,009, Cl. 229-41.00R.

Banai, Andras. Hand-operated tensioning and welding apparatus for thermoplastic bands. 4,272,314, Cl. 156-494.000.

Barbour, James L.: *See*—
Beckberger, LaVern H.; and Barbour, James L., 4,272,251, Cl. 44-1.0SR.

Barer, Sol J., to Celanese Corporation. 2-Butyl-2-ethyl-1,3-propanediol as a chemical pinching agent. 4,272,277, Cl. 71-78.000.

Barke, Martin B.; and Luebke, Rebecca A., to Cargill, Incorporated. Stable protective seed coating. 4,272,417, Cl. 260-22.00R.

Barlow, John V. Geometric construction toy apparatus. 4,271,628, Cl. 46-29.000.

Barnes, Elwood E.: *See*—
McLaughlin, Donald L.; and Barnes, Elwood E., 4,272,757, Cl. 340-152.00R.

Barnes, William J., to Newroyd Limited. Machine for producing a textile product. 4,271,769, Cl. 112-79.0FF.

Barnett, David L., to Three Phoenix Company. Method and apparatus for folding and sealing a floppy disc envelope. 4,272,235, Cl. 425-397.000.

Barns, Christopher E.: *See*—
Canning, Thomas N.; Barns, Christopher E.; Murphy, James P.; Gin, Bobby; and King, Robert W., 4,271,761, Cl. 102-504.000.

Baron, Kenneth, to Union Oil Company of California. Process for reducing carbon monoxide emissions from regenerators of catalytic cracking units. 4,272,358, Cl. 208-120.000.

Barrios, Philip A.: *See*—
Crosby, Philip C. S.; Barrios, Philip A.; and Perry, Ronald R., 4,272,689, Cl. 307-147.000.

Barry, Adelbert: *See*—
Robinson, Leon H., Jr.; Barry, Adelbert; and Speers, Jerry M., 4,271,908, Cl. 166-315.000.

Barthelemy, Andre J., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Automobile vehicle with transverse engine-drive unit. 4,271,920, Cl. 180-55.000.

Bartl, Herbert: *See*—
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, 4,272,428, Cl. 260-31.20R.

BASF Aktiengesellschaft: *See*—
Ammermann, Eberhard; Thym, Sabine; and Pommer, Ernst-Heinrich, 4,272,551, Cl. 424-324.000.
Baumann, Manfred; and Hoffmann, Werner, 4,272,456, Cl. 570-186.000.
Blankenmeister, Anton, 4,271,961, Cl. 206-216.000.
Hahn, Klaus; Naarmann, Herbert; Penzien, Klaus; and Weber, Heinz, 4,272,583, Cl. 428-407.000.
Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,272,282, Cl. 71-92.000.
Lach, Dietrich; Streicher, Rolf; and Feichtmayr, Franz, 4,272,243, Cl. 8-436.000.
Scheuermann, Horst; and Schneider, Dieter, 4,272,450, Cl. 260-463.000.
Steck, Werner; Loeser, Werner; Steuerwald, Manfred; Wunsch, Gerd; and Deigner, Paul, 4,272,563, Cl. 427-130.000.
Titzenthaler, Eckart; and Schwen, Roland, 4,272,443, Cl. 260-348.340.
Vyvial, Rudolf; Wallbillich, Guenter; and Trapp, Horst, 4,272,611, Cl. 430-306.000.

BASF Wyandotte Corporation: *See*—
Kaneko, Thomas M., 4,272,394, Cl. 252-99.000

Bass, Malley R.: *See*—
Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., 4,272,499, Cl. 423-242.000.

Bastian, Thomas W.; Lacy, Garry T.; and Vink, John J., to General Dynamics, Pomona Division. Aerodynamic control mechanism for thrust vector control. 4,272,040, Cl. 244-3.220.

Bate, Geoffrey; and Dunn, Larry P., to International Business Machines Corporation. Apparatus for disorienting magnetic particles. 4,271,782, Cl. 118-623.000.

Bates, George W., to Convergence Corporation. Video tape editing system. 4,272,790, Cl. 360-14.000.

Bates, Jack: *See*—
Bailey, Theodore B.; and Bates, Jack, 4,272,189, Cl. 356-28.000.

Bauer, Andrew J., Jr.; and Doering, John N., to Bauer, Andrew J., Jr.; Bauer, Andrew J., III; Shaw, Harold G., Sr.; and Balke, Fred W., part interest to each. Method and apparatus for rejuvenating and recycling asphalt. 4,272,212, Cl. 404-72.000.

Bauer, Andrew J., III: *See*—
Bauer, Andrew J., Jr.; and Doering, John N., 4,272,212, Cl. 404-72.000.

Bauer, Donald J.: *See*—
Schultze, Lawrence E.; Bauer, Donald J.; and Morimoto, Michael T., 4,272,491, Cl. 423-20.000.

Bauer, Patrick G. Solenoid housing. 4,272,747, Cl. 335-257.000.

Bauer, Peter. Fluid dynamic energy exchanger. 4,272,223, Cl. 417-54.000.

Baugh, Daniel W., Jr.: *See*—
Cook, Frank T.; Baugh, Daniel W., Jr.; and Chambers, Robert V., Jr., 4,272,455, Cl. 564-503.000.

Bauman, Robert A., to Colgate-Palmolive Company. Dialkylurea textile softening and antistatic agents. 4,272,413, Cl. 252-525.000.

Baumann, Manfred; and Hoffmann, Werner, to BASF Aktiengesellschaft. Derivatives of 8-dehydro-vitamin A and their preparation. 4,272,456, Cl. 570-186.000.

Baumbach, William J. Automatic sewage valve. 4,272,640, Cl. 137-110.000.

Bayer Aktiengesellschaft: *See*—
Balle, Gerhard; Rabe, Hansjurgen; and Vehlewald, Peter, 4,272,619, Cl. 521-169.000.
Frank, Walter; Bendszus, Otto; Freier, Hans-Joachim; and Traenckner, Hans-Joachim, 4,272,420, Cl. 260-28.00R.
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, 4,272,428, Cl. 260-31.20R.

Bayerische Motoren Werke A.G.: *See*—
Kuzma, Gyozo, 4,271,943, Cl. 192-53.00F.

BBC Brown, Boveri & Company, Limited: *See*—
Skala, Karel, 4,271,673, Cl. 60-660.000.

Beach, David L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Refractory metal oxide/silica supported nickel cluster catalyst. 4,272,406, Cl. 252-430.000.

Beach, David L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Metal modified refractory metal oxide/-silica supported nickel cluster catalyst. 4,272,407, Cl. 252-430.000.

Beaumont, Gregory J., to Zenith Radio Corporation. Anti-ringing circuit for CRT deflection yoke. 4,272,705, Cl. 315-408.000.

Beck, Jacob H., to BTU Engineering Corporation. Helically wound heater. 4,272,639, Cl. 13-25.000.

Beckberger, LaVern H.; and Barbour, James L., to Atlantic Richfield Company. Process for removing sulfur from coal. 4,272,251, Cl. 44-1.0SR.

Becker, Carl M. Tap for dispensing beverages. 4,271,992, Cl. 222-509.000.

Becker, Hubert: *See*—
Becker, Josef; Becker, Hubert; and Becker, Matthias, 4,272,037, Cl. 242-118.100.

Becker, Josef; Becker, Hubert; and Becker, Matthias. Lap creel. 4,272,037, Cl. 242-118.100.

Becker, Matthias: *See*—
Becker, Josef; Becker, Hubert; and Becker, Matthias, 4,272,037, Cl. 242-118.100.

Beckman Instruments, Inc.: *See*—
Crosby, John B., 4,272,658, Cl. 200-6.00B.
Harman, John N., III, 4,272,486, Cl. 422-91.000.
Kaye, Wilbur I., 4,272,195, Cl. 356-368.000.
Neti, Radhakrishna M., 4,272,248, Cl. 23-232.00R.

Beckwith, Bruce R.: *See*—
Trahan, Albert J.; Beckwith, Bruce R.; and Murray, David B., 4,272,273, Cl. 65-167.000.

Becus, Robert, to Societe des Aciers Fins de l'Est. Device for regulating the flow through a plug of a dispensing vessel in a continuous casting installation, using the level of the metal bath in the receiving ingot mold. 4,271,896, Cl. 164-449.000.

Bednar, John M.: *See*—
Noerager, Jere A.; Taft, Daniel G.; and Bednar, John M., 4,272,059, Cl. 254-392.000.

Beecham Group Limited: *See*—
Smith, Paul; and Cassidy, Frederick, 4,272,445, Cl. 260-397.400.
Taskis, Charles B., 4,272,542, Cl. 424-271.000.

Beecher, William J. Binocular with novel arrangement of hinge means between the telescopes thereof. 4,272,153, Cl. 350-36.000.

Beeman, Robert H., to GTE Automatic Electric Laboratories Inc. Analog-to-digital converter alignment circuit. 4,272,721, Cl. 324-73.00R.

Beeny, Mark T.; and Miles, James A., to Monsanto Company. 1-Methyl-2-aryl-2,3-dihydro-1H-2,1-benzazaphosphole-1-oxides, herbicidal compositions and the use thereof. 4,272,278, Cl. 71-86.000.

Beharry, Christopher R., to Procter & Gamble Company, The. Crude edible oil wax removal process. 4,272,447, Cl. 260-425.000.

Behle, Gunter R.: *See*—
Wempe, Richard J.; and Behle, Gunter R., 4,272,053, Cl. 251-144.000.

Bekker, Boris G.: *See*—
Samokhin, Andrei V.; Bekker, Boris G.; and Davydov, Alexandr N., 4,272,163, Cl. 350-357.000.

Belanger, Germain, to Bombardier Limited. Structural panel. 4,271,649, Cl. 52-309.200.

Belin, David: *See*—
Zapf, Richard L., 4,272,142, Cl. 339-29.00B.

Beling, Thomas E.; and Bric, Leopold, to Sigma Instruments, Inc. Phase locked loop control system. 4,272,712, Cl. 318-696.000.

Belkevich, Peter I.; Buslovich, Solomon J.; Dolidovich, Elena F.; Kaganovich, Fanya L.; Komov, Oktyabr P.; and Timofeeva, Ljudmila P. Medicinal preparation containing the extract of peat wax resin. 4,272,527, Cl. 424-195.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cubbison, Richard J., Jr., 4,272,735, Cl. 331-108.00B.

Gates, Geoffrey W.; and Kepley, Garry D., 4,272,810, Cl. 364-900.000.
Kahng, Dawon; and Shankoff, Theodore A., 4,271,583, Cl. 29-571.000.
von Roesgen, Charles A., 4,271,573, Cl. 29-33.00M.

Bell, William L.: *See*—
Molnar, John R.; Mechling, Earl H.; and Bell, William L., 4,272,012, Cl. 236-1.00E.

Belmares-Sarabia, Armand; Chayka, Stanley J.; and Lund, Robert M., to Teletronics International, Inc. Film scanner with variable rate image enhancement. 4,272,780, Cl. 358-54.000.

Beloit Corporation: *See*—
Justus, Edgar J., 4,272,316, Cl. 162-206.000.
Roerig, Arnold J., 4,272,317, Cl. 162-272.000.

Beltone Electronics Corporation: *See*—
Brander, Richard, 4,272,591, Cl. 429-98.000.

Bendix Corporation, The: *See*—
Brush, Robert W.; Werth, Dee A.; and Schildkraut, Alan L., 4,272,144, Cl. 339-89.00R.
Fairbairn, LeRoy W., 4,272,150, Cl. 339-276.00T.
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,272,149, Cl. 339-258.00R.
McDaniel, George H., 4,272,818, Cl. 364-118.000.
Seitz, William R.; and Leung, Chun K., 4,271,798, Cl. 123-419.000.
Woodruff, Frank, 4,272,227, Cl. 417-440.000.

Bendler, Hellmut; Homburg, Axel; and Penner, Horst, to Dynamit Nobel Aktiengesellschaft. Fastening element with a cavity containing an explosive charge. 4,271,747, Cl. 411-20.000.

Bendoni, Leonard V.; and Smith, Hugh L., to Polaroid Corporation. Processing apparatus for self-developing type roll film. 4,272,178, Cl. 354-298.000.

Bendszus, Otto: *See*—
Frank, Walter; Bendszus, Otto; Freier, Hans-Joachim; and Traenckner, Hans-Joachim, 4,272,420, Cl. 260-28.00R.

Bengtsson, Bengt L.; and Fonskov, Jorgen, to Produits Findus S.A. Process for preparing coated fried vegetables. 4,272,553, Cl. 426-241.000.

Bengtsson, Sigurd W. Teeth cleaning implement. 4,271,854, Cl. 132-89.000.

Benjamin, Joel M., Jr.: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,272,650, Cl. 179-77.000.

Bennett, James T., to Uni-Pump, Inc. Gasoline pump construction. 4,271,981, Cl. 222-32.000.

Benton, Robert L., to General Motors Corporation. Manufacture of ball nut with internal crossover path for ball recirculation. 4,272,476, Cl. 264-225.000.

Berend, Francis T., to Societe Anonyme Parinter. Protective glove and its method of manufacture. 4,272,568, Cl. 427-261.000.

Beretta, Pier C., to Fabbrica d'Armi P. Beretta S.p.A. Pistol with stock extension and auxiliary grip. 4,271,623, Cl. 42-72.000.

Berger, Alvin H., to Ford Motor Company. Carburetor accelerator pump lockout system. 4,272,459, Cl. 261-34.00A.

Berger, Peter W., to Metallschlauch-Fabrik Pforzheim Witzenmann GmbH. Hydraulic shock absorbing arrangement for pipe conduit systems. 4,271,938, Cl. 188-280.000.

Berger, Philip H. Proximity detector. 4,271,763, Cl. 104-179.000.

Bergkvist, Lars A. Device for indicating a particular angle in pipelaying work or similar operations. 4,272,191, Cl. 356-153.000.

Berglund, Sidney J.; and Matthews, Gary B., to Minnesota Mining and Manufacturing Company. Modular connector and protector. 4,272,147, Cl. 339-99.00R.

Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Aluminosilicate sols and powders. 4,272,409, Cl. 252-455.00R.

Bernard, Andre; Disdier, Andre; and Royer, Michel, to Philagro S.A. Process for the manufacture of aluminum monoethyl phosphite. 4,272,448, Cl. 260-448.00R.

Bernhardsson, Klas Y. T.: *See*—
Nyfeldt, Harry; and Bernhardsson, Klas Y. T., 4,272,214, Cl. 405-72.000.

Berthold, Fritz; and Kubisiak, Helmut, to Laboratorium Prof. Dr. Rudolf Berthold. Method and apparatus for the automatic stabilization of drift in radiation measurements. 4,272,677, Cl. 250-252.000.

Berube, Richard G., to King Instrument Corporation. Cassette correlator. 4,271,955, Cl. 198-400.000.

Betancourt, George N.; and Etzel, William W., to Combustion Engineering, Inc. Nuclear reactor internals and control rod handling device. 4,272,321, Cl. 176-87.000.

Bettencourt, Darryl G., to Blackwelders. Load retraction preventing finger array. 4,271,756, Cl. 100-220.000.

Bey, Roger, to Babcock & Wilcox Company, The. Drag ball valve including variable pressure reducing means. 4,271,866, Cl. 137-625.300.

Bialek, Rene F., to Texaco Canada Inc. Process for breaking emulsions in fluids from in situ tar sands production. 4,272,360, Cl. 208-188.000.

Bianchi, Giuseppe: *See*—
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,272,354, Cl. 204-290.00R.

Bianchi, Valerio; Schmidt, Peter-Jurgen; Latsch, Reinhard; and Wahl, Josef, to Robert Bosch GmbH. Method and apparatus for determining fuel mixture adjustment values for fuel burning engines. 4,271,804, Cl. 123-440.000.

BICC Limited: *See*—
Slaughter, Raymond J., 4,272,155, Cl. 350-96.230.

Bienert, Horst; Igel, Richard; and Rengstl, Johann, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof. 4,272,125, Cl. 296-223.000.

Biermann, Udo K. P., to U.S. Philips Corporation. Absorption heat pump work medium consisting of a solution of a fluorochloroalkane in a substituted amino phosphorus oxide. 4,272,389, Cl. 252-69.000.

Biller, Bruce A.; and Jackson, Hiram S., Jr., to S&C Electric Company. High-voltage fuse link and method of manufacturing same. 4,272,751, Cl. 337-231.000.

Bio Systems Design, Corp.: *See*—
Turner, Paul F.; and Gandhi, Om P., 4,271,848, Cl. 128-804.000.

Biotest Serum Institut GmbH: *See*—
Kotitschke, Ronald; and Stephan, Wolfgang, 4,272,523, Cl. 424-101.000.

Bird & Son, Inc.: *See*—
Cunning, Joseph M., 4,272,370, Cl. 210-162.000.

Birdsall, Ivan P.; Bradmon, Paul J.; Buddington, Donald L.; Garcia, Vincent H.; and Nelson, Don S., to International Business Machines Corporation. Automatic alignment of optical elements in an electrophotographic apparatus. 4,272,187, Cl. 355-56.000.

Biron, Gerard, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Pulse-forming circuit for on/off conversion of an image analysis signal. 4,272,789, Cl. 358-282.000.

Bisczat, John J.; and Bleau, Charles D., to International Business Machines Corporation. Signal controlled indexing rate shifter for a typewriter. 4,272,205, Cl. 400-575.000.

Bishop, Reginald M., to Crane Limited. Pressure tapping. 4,271,863, Cl. 137-557.000.

Biuro Studiow, projetwo i Realizacji in Westycji Przemyslu Nieorganicznego "Biprokawas": *See*—
Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, 4,272,026, Cl. 239-273.000.

Black Clawson Company, The: *See*—
Espenmiller, Howard P., 4,272,315, Cl. 162-4.000.

Black & Decker Inc.: *See*—
Bradus, Robert, 4,272,821, Cl. 364-475.000.

Black, Robert B. Energy conversion system. 4,271,789, Cl. 122-16.000.

Blackwelders: *See*—
Bettencourt, Darryl G., 4,271,756, Cl. 100-220.000.

Blades, Frederick K., to PureCycle Corporation. Ultraviolet radiation sensor. 4,272,679, Cl. 250-372.000.

Blakeslee, Harry N., to American Can Company. Controlled dispersion of coating inside non-circular hollow articles. 4,272,567, Cl. 427-236.000.

Blanford, Denis M.; and Naseem, Syed, to NCR Corporation. Symbol processing system. 4,272,675, Cl. 235-463.000.

Blank, Werner J., to American Cyanamid Company. Water-based glyoxal cured coating compositions. 4,272,590, Cl. 428-460.000.

Blankenmeister, Anton, to BASF Aktiengesellschaft. Box for tools and accessories for tape cassettes, especially for magnetic tape cassettes. 4,271,961, Cl. 206-216.000.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See*—
Eibe, Werner W., 4,271,959, Cl. 198-777.000.

Blaw Knox Limited: *See*—
McGovarin, Roy R., 4,272,213, Cl. 404-118.000.

Bleau, Charles D.: *See*—
Bisczat, John J.; and Bleau, Charles D., 4,272,205, Cl. 400-575.000.

Bloom, Arlene N., executrix: *See*—
Sachdev, Krishna G.; and Bloom, Stanley M., deceased, 4,272,632, Cl. 564-501.000.

Bloom, Stanley M., deceased: *See*—
Sachdev, Krishna G.; and Bloom, Stanley M., deceased, 4,272,632, Cl. 564-501.000.

Blue Circle Industries Limited: *See*—
Brooks, Kenneth; Shiel, Leslie E.; and Smith, David E., 4,272,297, Cl. 106-306.000.

Blum, Harold G., to Koller Craft Plastic Products, Inc. Lighting panel trim element. 4,272,804, Cl. 362-408.000.

Blumenthal, John, to Gould Inc. Toner clean-off head. 4,271,559, Cl. 15-308.000.

Blythin, David J., to Schering Corporation. 2,4-[1H,3H,5H]-(1)-Benzopyrano-[2,3-d]-pyrimidinediones and their use as anti-allergy agents. 4,272,535, Cl. 424-248.540.

BMI Inc.: *See*—
Allison, Ralph E., 4,272,020, Cl. 239-8.000.

Bodig, Bernd; Schmied, Helmut; Hohne, Gerd; and Fritz, Adolf, to Robert Bosch GmbH. Apparatus for maintaining constant ignition energy with increasing engine speeds in an ignition system for an internal combustion engine. 4,271,812, Cl. 123-609.000.

Bodine, Albert G. Elastically vibratory longitudinal jacketed drill. 4,271,915, Cl. 175-56.000.

Body Design, Incorporated: *See*—
Schachner, Dianne; and Zimmerman, Barbara, 4,272,070, Cl. 272-62.000.

Boeing Commercial Airplane Company: *See*—
Botka, Leslie M., 4,272,047, Cl. 248-74.0PB.

Boeing Company, The: *See*—
Davert, Edward J.; and Gants, Wilbur L., 4,272,215, Cl. 408-14.000.
Ketner, Clyde R.; and Whitener, Philip C., 4,271,975, Cl. 220-80.000.
Pease, George E., 4,271,749, Cl. 91-358.00R.

Boettcher, Charles E., to National Semiconductor Corporation. Self-aligned floating gate memory cell and method of manufacture. 4,272,774, Cl. 357-23.000.

Bogert, Robert C.: *See*—
Rudy, Marion F., 4,271,606, Cl. 36-29.000.

Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to International Mobile Machines Incorporated. Power supply system. 4,272,650, Cl. 179-77.000.

Bologa, Elvis. Liquid transfer device. 4,271,878, Cl. 141-375.000.

Bolt Associates, Inc.: *See*—
Chelminski, Stephen V., 4,271,924, Cl. 181-120.000.

Bolton, Barbara A. Walker apparatus. 4,272,071, Cl. 272-70.400.

Bombardier Limited: *See*—
Belanger, Germain, 4,271,649, Cl. 52-309.200.

Bondarenko, Alla V.: *See*—
Shtern, Maria A.; Levit, Nelli I.; Bondarenko, Alla V.; and Kaschentseva, Alexandra K., 4,272,291, Cl. 106-14.050.

Bononi, Walter H. Temples for eyeglasses. 4,272,166, Cl. 351-111.000.

Booth, David L.; and Gray, Joseph E., to Morton-Norwich Products, Inc. 1-Chloro-1-p-methoxybenzoylformaldoxime-N-methylcarbamate. 4,272,453, Cl. 260-543.100.

Bopp, Robert D.; Klosterman, David P.; and Lipshield, Eugene C., to Orscheln Co. Cable tension adjusting means for a brake cable operating lever. 4,271,718, Cl. 74-522.000.

Borg-Warner Corporation: *See*—
Goldberg, Gerald; Myers, Charles L.; Parsons, Charles F.; and Steffancin, William, 4,272,584, Cl. 428-412.000.

Bories, David G.: *See*—
Filice, Dennis; and Bories, David G., 4,272,093, Cl. 280-206.000.

Borkan, William N. Power manageable circuit breaker. 4,272,687, Cl. 307-115.000.

Borracci, Pasquale. Apparatus for charging an internal combustion engine. 4,271,800, Cl. 123-430.000.

Bostrom, Gosta: *See*—
Eriksson, Birger; and Bostrom, Gosta, 4,271,987, Cl. 222-160.000.

Botka, Leslie M., to Boeing Commercial Airplane Company. Adjustable clamp. 4,272,047, Cl. 248-74.0PB.

Bottcher, Irmgard: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,272,543, Cl. 424-273.00R.

Bouchaudon, Jean: *See*—
Aloup, Jean-Claude; Bouchaudon, Jean; Farge, Daniel; and James, Claude, 4,272,534, Cl. 424-248.510.

Bouda, Horymir J. Apparatus for producing compresses for covering wounds. 4,272,066, Cl. 493-418.000.

Bouette, David W., to E. T. Oakes Limited. Method and apparatus for producing a cellular product. 4,272,558, Cl. 426-660.000.

Bousaid, Issam S.; and Ho, Benny K-C, to Texaco Inc. Oil recovery method employing alternate slugs of surfactant and fresh water solution of sacrificial agent. 4,271,906, Cl. 166-273.000.

Bowlus, Burton R.; and McKinney, Gerald L., to Wichita Pro-Tech Inc. Protective helmet with releasable face guard apparatus. 4,271,537, Cl. 2-424.000.

Boyarsky, Alexandr A.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,272,033, Cl. 242-7.05B.

Boykin, Richard. Container sign holder. 4,271,616, Cl. 40-11.00A.

Braas & Co. GmbH: *See*—
Ewald, Richard; and Freiberg, Klaus, 4,272,573, Cl. 428-40.000.

Bradley, Daniel J.: *See*—
Hutchinson, Marcus H. R.; and Bradley, Daniel J., 4,272,732, Cl. 331-94.50P.

Bradmon, Paul J.: *See*—
Birdsall, Ivan P.; Bradmon, Paul J.; Buddington, Donald L.; Garcia, Vincent H.; and Nelson, Don S., 4,272,187, Cl. 355-56.000.

Bradus, Robert, to Black & Decker Inc. Digital blade adjustment read-out for a portable power tool. 4,272,821, Cl. 364-475.000.

Brady, Darrell B. Method and device for introducing liquid into boat motor cooling systems. 4,271,874, Cl. 141-1.000.

Brambley, Michael I.; Myers, Herbert J.; and Rios, Januario R., Jr., to Picker Chemicals Inc. Container for film processing chemicals. 4,271,965, Cl. 206-219.000.

Brander, Richard, to Beltone Electronics Corporation. Electronic apparatus with battery chamber. 4,272,591, Cl. 429-98.000.

Braun Aktiengesellschaft: *See*—
Ernst, Rolf; and Ullmann, Roland, 4,271,590, Cl. 30-43.920.

Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Vehicle adapted to be guided on tracks for the public local passenger traffic with pivotal rear axle and longitudinal guide members for such axle. 4,271,764, Cl. 104-247.000.

Brefer S.p.A.: *See*—
Ferrero, Franca B., 4,271,613, Cl. 37-103.000.

Breitschwerdt, Werner: *See*—
Schmid, Walter; Breitschwerdt, Werner; Huber, Guntram; and Reidelbach, Willi, 4,272,103, Cl. 280-751.000.

Brems, John H. Tool carriage advance and retraction control. 4,271,710, Cl. 74-27.000.

Brems, John H. Apparatus for cycloidal acceleration and deceleration with partial constant velocity. 4,271,727, Cl. 74-813.00R.

Breslin, Edward P. Educational board game. 4,272,080, Cl. 273-249.000.

Breslow, David S.; and Simpson, David A., to Hercules Incorporated. Photopolymer process using photo oxidizable component. 4,272,610, Cl. 430-302.000.

Bric, Leopold: *See*—
Beling, Thomas E.; and Bric, Leopold, 4,272,712, Cl. 318-696.000.

Bridge, Erland T., to Eaton Corporation. Pumping element for temperature responsive viscous fan drive. 4,271,946, Cl. 192-58.00B.

Bridgestone Tire Co., Ltd.: *See*—
Takigawa, Hiroyoshi; Yahagi, Mitsuhisa; and Ogawa, Hiroshi, 4,271,885, Cl. 152-209.00R.

Tanaka, Mamoru, 4,271,551, Cl. 9-8.00R.

Bristol-Myers Company: *See*—
Menard, Marcel; and Martel, Alain, 4,272,437, Cl. 260-239.00A.

British Gas Corporation: *See*—
Anderson, John A., 4,271,993, Cl. 222-591.000.

Britson, Stanley N. Wall covering. 4,272,576, Cl. 428-100.000.

Britt, Monroe; and Westlin, Karl L., to American Air Filter Company, Inc. Gas-separation filter device. 4,272,262, Cl. 55-302.000.

Broadhill Development Corporation: *See*—
Carlson, Elmer T., 4,272,646, Cl. 174-88.00B.

Brocklehurst, Charles E.: *See*—
Burton, Perry E.; and Brocklehurst, Charles E., 4,271,767, Cl. 112-2.000.

Broetto, Costantino, to Fratelli Borletti S.p.A. Device for indicating insufficient inflation pressure in vehicle tires. 4,272,755, Cl. 340-58.000.

Brooks, Kenneth; Shiel, Leslie E.; and Smith, David E., to Blue Circle Industries Limited. Compositions for use with papermaking fillers. 4,272,297, Cl. 106-306.000.

Broom, James C. Game with board and tokens. 4,272,081, Cl. 273-265.000.

Brown, George S.; and Hatton, Robert E., to Riggers (Steeplejacks) Limited. Inspection or maintenance cradle. 4,271,927, Cl. 182-36.000.

Brown, Milton: *See*—
Zapf, Richard L., 4,272,142, Cl. 339-29.00B.

Bruckner-Trockentechnik KG: *See*—
Grun, Reinhold; Troster, Dietrich; and Gleich, Bruno, 4,271,569, Cl. 26-79.000.

Brudermanns, Karola: *See*—
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, 4,272,428, Cl. 260-31.20R.

Brunsell, Dennis A.; and Riggs, Olen L., Jr., to Kerr-McGee Corporation. Process for the electrolytic reductive leaching of ilmenite ore. 4,272,343, Cl. 204-130.000.

Brush, Robert W.; Werth, Dee A.; and Schildkraut, Alan L., to Bendix Corporation, The. Spring loaded anti-rotation device for electrical connectors. 4,272,144, Cl. 339-89.00R.

Brusseau, H. Donald; and Brusseau, Louvain M. Convertible door structure. 4,271,892, Cl. 160-92.000.

Brusseau, Louvain M.: *See*—
Brusseau, H. Donald; and Brusseau, Louvain M., 4,271,892, Cl. 160-92.000.

Bryant, Donald C.: *See*—
Chatfield, John F., Jr.; Bryant, Donald C.; Daly, James C.; and Kamila, Friedolf, 4,271,909, Cl. 169-70.000.

BTU Engineering Corporation: *See*—
Beck, Jacob H., 4,272,639, Cl. 13-25.000.

Buchhorn, Peter, to John Lysaght (Australia) Limited. Cladding sheets. 4,271,653, Cl. 52-522.000.

Buchina, Jerome E.: *See*—
Buchwald, Frank S.; Maher, Richard C.; and Buchina, Jerome E., 4,272,695, Cl. 310-242.000.

Buchmuller, Gunter, to Volkswagenwerk Aktiengesellschaft. Oil cooler for an internal combustion engine. 4,271,901, Cl. 165-165.000.

Buchwald, Frank S.; Maher, Richard C.; and Buchina, Jerome E., to Towmotor Corporation. Brush wear indicator. 4,272,695, Cl. 310-242.000.

Buckley, Franklin J.; and Hubbard, David W., to Pitney-Bowes, Inc. Electrophotocopier developer unit mounting system. 4,271,786, Cl. 118-661.000.

Buckman, Raymond W., Jr.: *See*—
Yoldas, Bulent E.; Filippi, Arthur M.; and Buckman, Raymond W., Jr., 4,272,588, Cl. 428-433.000.

Budd Company, The: *See*—
Dickhart, William W., III, 4,271,765, Cl. 105-164.000.
Mekosh, George, Jr., 4,272,133, Cl. 303-99.000.

Buddington, Donald L.: *See*—
Birdsall, Ivan P.; Bradmon, Paul J.; Buddington, Donald L.; Garcia, Vincent H.; and Nelson, Don S., 4,272,187, Cl. 355-56.000.

Budinski, John A., to General Motors Corporation. Electrically actuated viscous fan clutch. 4,271,945, Cl. 192-58.00B.

Burg, Kenneth E. Fluid actuated acoustic pulse generator. 4,271,925, Cl. 181-120.000.

Burgener, Robert C.; and Martin, Philip T., to Interlake, Inc. Motor control techniques. 4,272,707, Cl. 318-139.000.

Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., to Atlantic Richfield Company. Process for removal of sulfur and ash from coal. 4,272,250, Cl. 44-1.0SR.

Burkdoll, Frank B., to Explosive Technology, Inc. Coupling device for ignitive reactions. 4,272,102, Cl. 280-731.000.

Burr-Brown Research Corporation: *See*—
Prazak, Paul R.; and Williams, Theodore L., 4,272,760, Cl. 340-347.0CC.

Burtelson, Frederick W., to Reliable Electric Company. Method for cleaning grease-filled cable stub. 4,272,300, Cl. 134-5.000.

Burton, Perry E.; and Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Sheet production system. 4,271,767, Cl. 112-2.000.

Burton, Perry E., to Opelika Manufacturing Corporation. Cutting and hemming system. 4,271,774, Cl. 112-262.100.

Burton, Philip J.: *See*—
Snape, Christopher J.; and Burton, Philip J., 4,271,858, Cl. 137-74.000.

Bush, Hazel S. Burnt sugar caramel flavoring and process of making. 4,272,299, Cl. 127-29.000.

Buslovich, Solomon J.: *See—*
Belkevich, Peter I.; Buslovich, Solomon J.; Dolidovich, Elena F.; Kaganovich, Fanya L.; Komov, Oktyabr P.; and Timofeeva, Ljudmila P., 4,272,527, Cl. 424-195.000.

Busschaert, Bruno J.: *See—*
Schwob, Alain L. C.; Busschaert, Bruno J.; and Ivorra, Claude A. M., 4,271,825, Cl. 126-450.000.

Bute, Donald R. Device for testing smoke detector alarms. 4,271,693, Cl. 73-1.00G.

Butler, Johnny L.; and Valigura, Joe L., Jr. Method and apparatus for blocking the flow of fluids through an elongated pipe section. 4,271,870, Cl. 138-94.300.

Butler Manufacturing Company: *See—*
Steenson, Thomas W.; and Paton, W. Donald, 4,271,737, Cl. 83-171.000.
Steenson, Thomas W.; and Paton, W. Donald, 4,272,065, Cl. 269-46.000.

Butt, Alan G., to Trane Company, The. Liquid wetted gas cooled heat exchanger. 4,272,462, Cl. 261-153.000.

Butz, David E., to Data Packaging Corporation. Disk pack handle mechanism. 4,271,963, Cl. 206-444.000.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Figala, Volker, 4,272,507, Cl. 424-275.000.

C-I-L Inc.: *See—*
Pollock, David C. I., 4,272,375, Cl. 210-194.000.
Pollock, David C. I., 4,272,379, Cl. 210-621.000.

C & K Components, Inc.: *See—*
Simpson, Kenneth, 4,272,662, Cl. 200-275.000.

C. M. Offray & Son, Inc.: *See—*
Grewe, Josef; and Portner, Philip, 4,272,564, Cl. 427-163.000.

Cabot Corporation: *See—*
Herchenroeder, Robert B. H.; and Klein, H. Joseph, 4,272,289, Cl. 75-122.000.

Cadle, Rose Marie: *See—*
Cadle, Walter L., 4,272,126, Cl. 297-258.000.

Cadle, Walter L., to Cadle, Rose Marie. Joggling board for use as exercise device or as item of lawn furniture. 4,272,126, Cl. 297-258.000.

Caldini, Oreste; and Meucci, Sandro, to Societa Italo-Britannica-L. Manetti-H. Roberts Co. Process for improving transcutaneous and transfollicular absorption of cosmetic compositions. 4,272,516, Cl. 424-70.000.

Calgon Corporation: *See—*
Dixon, Kenneth W.; and Hoffstadt, Frederick A., 4,272,364, Cl. 209-166.000.

Cameron Iron Works, Inc.: *See—*
Rowe, Frederick G., 4,271,857, Cl. 137-73.000.

Camin, Leopoldo L.; and Liteplo, Maria P., to New England Nuclear Corporation. Reductant composition for technetium-99m and method for making technetium-99m labelled ligands. 4,272,503, Cl. 424-1.000.

Cammarano, Armando S.; DiGiacomo, Giulio; and Drofitz, Stephen S., Jr., to International Business Machines Corporation. Determination of electric current flow patterns. 4,272,722, Cl. 324-76.00R.

Campbell, Chris A., to Dana Corporation. Axle disconnect. 4,271,722, Cl. 74-710.500.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Ward, Frederick D., 4,271,748, Cl. 89-1.814.

Canadian Fram Limited: *See—*
Yew, Kwang, 4,271,948, Cl. 192-84.00T.

Canfield, Allen B.: *See—*
Whitaker, William C.; and Canfield, Allen B., 4,271,877, Cl. 141-166.000.

Canning, Thomas N.; Barns, Christopher E.; Murphy, James P.; Gin, Bobby; and King, Robert W., to United States of America, National Aeronautics and Space Administration. High acceleration cable deployment system. 4,271,761, Cl. 102-504.000.

Cannondale Corporation: *See—*
Montgomery, Joseph S., 4,271,996, Cl. 224-32.00A.

Canon Kabushiki Kaisha: *See—*
Arai, Toshio; Nagasawa, Takeshi; Iwaya, Toshio; Inoue, Shunzo; and Konishi, Motofumi, 4,272,185, Cl. 355-28.000.
Iwashita, Tomonori; Fukahori, Hidehiko; and Mashimo, Yukio, 4,272,173, Cl. 354-173.000.
Kosugi, Masao, 4,271,577, Cl. 29-238.000.
Mashimo, Yukio, 4,272,170, Cl. 354-149.000.

Canonaco, Rudy: *See—*
Frank, Robert G.; Canonaco, Rudy; and Posney, Richard V., 4,272,274, Cl. 65-273.000.

Capelle, Anton; and Scholten, Heinz, to Chemische Werke Huls AG. Suspension agent for synthetic resin powders. 4,272,566, Cl. 427-208.200.

Capo, James L., to International Paper Company. Food service container and lid. 4,272,010, Cl. 229-43.000.

Carduner, Jean-Jacques, to Regie Nationale des Usines Renault. Loading mechanism for rack and pinion steering. 4,271,716, Cl. 74-422.000.

Cargile, Neil H., Jr. Coal washing apparatus. 4,272,363, Cl. 209-10.000.

Cargill, Incorporated: *See—*
Barke, Martin B.; and Luebke, Rebecca A., 4,272,417, Cl. 260-22.00R.

Carl Zeiss-Stiftung: *See—*
Muchel, Franz; and Vogel, Albrecht, 4,272,165, Cl. 351-13.000.

Carle, Hermann; Klement, Heribert; and Knobloch, Uwe, to ITT Industries, Inc. Window lifter installation. 4,272,708, Cl. 318-266.000.

Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,271,695, Cl. 73-23.100.

Carlson, Carolyn: *See—*
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Carlson, Elmer T., to Broadhill Development Corporation. Bus conduit electrical distribution system. 4,272,646, Cl. 174-88.00B.

Carlson, Elmer V., to Industrial Research Products, Inc. Acoustic transducer of improved construction. 4,272,654, Cl. 179-119.00A.

Carlson, J. P., Jr.: *See—*
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Carman, Justice N., to Pennish, John S., a part interest. Apparatus for producing and casting liquid silicon. 4,272,488, Cl. 422-199.000.

Carney, Ronald E.; and McAlpine, James B., to Abbott Laboratories. Method of producing 1-epi-2-deoxyfortimicin A and intermediates therefor. 4,272,626, Cl. 536-17.00R.

Carocci, Alberto, to Racla Co. Limited. Fireplace. 4,271,816, Cl. 126-132.000.

Caron, Beryl, to Zimmerman Brush Co. Shock absorbing floor brush assembly. 4,271,557, Cl. 15-180.000.

Carroll, James C.; Chapman, Donald L.; Flee, Stephen L.; and McGoldrick, Gilbert A., to Square D Company. Fire resistant fitting. 4,272,643, Cl. 174-48.000.

Carter, Robert A. Apparatus for transporting a wheelchair upon an automobile. 4,272,218, Cl. 414-462.000.

Casagrande, Cesare; and Ferrari, Giorgio, to Simes S.p.A. O-Alcoxycarbonylphenyl esters of anthranilic acid with therapeutical activity, method for their preparation and related pharmaceutical composition. 4,272,529, Cl. 424-230.000.

Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., to Sperry Corporation. Bubble memory optimization by adjusting properties of quartz film. 4,272,347, Cl. 204-192.00D.

Cashman, Kenneth A.: *See—*
Marshall, Richard L.; and Cashman, Kenneth A., 4,271,674, Cl. 60-737.000.

Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., to Lone Star Steel Company. Process and apparatus for the removal of particulate matter and reactive or water soluble gases from carrier gases. 4,272,499, Cl. 423-242.000.

Cassat, Robert: *See—*
Semanaz, Daniel; and Cassat, Robert, 4,272,673, Cl. 219-544.000.

Cassidy, Frederick: *See—*
Smith, Paul; and Cassidy, Frederick, 4,272,445, Cl. 260-397.400.

Caterpillar Tractor Co.: *See—*
Reisinger, George E., Jr., 4,272,306, Cl. 148-16.500.
Shaffer, Walter M., 4,271,723, Cl. 74-720.000.

Cavazza, Claudio. Therapeutical method for the treatment of chronic uraemic patients undergoing periodical haemodialysis and liquid composition for dialysis for use in such a method. 4,272,549, Cl. 424-316.000.

Cavender, Patricia: *See—*
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,272,439, Cl. 260-245.20R.

Cavitron Corporation: *See—*
Dempster, Philip T.; and Pun, John Y., 4,271,701, Cl. 73-861.420.

Cecil, Howard E.: *See—*
Kutik, Louis F.; and Cecil, Howard E., 4,271,990, Cl. 222-321.000.
Kutik, Louis F.; and Cecil, Howard E., 4,272,228, Cl. 417-460.000.

Celanese Corporation: *See—*
Barer, Sol J., 4,272,277, Cl. 71-78.000.

Cella, John A.; Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; and Vargas, Ovidio, to Eli Lilly and Company. Skin cell renewal regime. 4,272,544, Cl. 424-273.00R.

Centre National d'Etudes de Telecommunication: *See—*
Le Bris, Herve, 4,272,844, Cl. 370-66.000.

Cervinka, Franz. Vibratory sander. 4,272,110, Cl. 291-23.000.

Chalich, Charles, to Taylor Manufacturing Company. Conveyors and chain. 4,271,960, Cl. 198-779.000.

Chambers, Robert V., Jr.: *See—*
Cook, Frank T.; Baugh, Daniel W., Jr.; and Chambers, Robert V., Jr., 4,272,455, Cl. 564-503.000.

Chamblin, Thomas F.: *See—*
Riney, John S.; and Chamblin, Thomas F., 4,272,690, Cl. 307-265.000.

Chambon, Andre F., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Suspension of a group of vehicle wheels. 4,272,101, Cl. 280-692.000.

Champion International Corporation: *See—*
Cottrell, Edward D., 4,271,978, Cl. 221-243.000.
Thompson, Kenneth P., 4,272,312, Cl. 156-244.110.

Chandler, Roy L., to Advanced Marine Concepts, Inc. Connection means for a knock-down boat. 4,271,549, Cl. 9-2.00S.

Chang, Ben-Lee; and Lee, Me-Fei. Security attache case with automatic alarm system. 4,272,763, Cl. 340-571.000.

Chang, Hao-jan: *See—*
Kim, Sang H.; and Chang, Hao-jan, 4,272,328, Cl. 204-1.00T.

Chapman, Donald L.: *See—*
Carroll, James C.; Chapman, Donald L.; Flee, Stephen L.; and McGoldrick, Gilbert A., 4,272,643, Cl. 174-48.000.

Charles E. Green & Son, Inc.: *See—*
McDonald, Walter; and Seitel, Norbert J., 4,271,579, Cl. 29-430.000.

Charles Winn (Valves) Limited: *See*—
Snape, Christopher J.; and Burton, Philip J., 4,271,858, Cl. 137-74.000.

Chatfield, John F., Jr.; Bryant, Donald C.; Daly, James C.; and Kamila, Friedolf, to American Fire and Industrial Products Company. Modular fire fighting apparatus. 4,271,909, Cl. 169-70.000.

Chatterjee, Pallab K.; and Tasch, Al F., Jr., to Texas Instruments Incorporated. Method of making post-metal ion beam programmable MOS read only memory. 4,272,303, Cl. 148-1.500.

Chayka, Stanley J.: *See*—
Belmares-Sarabia, Armand; Chayka, Stanley J.; and Lund, Robert M., 4,272,780, Cl. 358-54.000.

Chedid, Louis; Choay, Jean; Lederer, Edgar; Lefrancier, Pierre; Parant, Monique; and Parant, Francine, to Agence Nationale de Valorisation de la Recherche (ANVAR). N-Acyl-muramyl peptide derivatives having anti-infectious infections properties. 4,272,524, Cl. 424-177.000.

Chelminski, Stephen V., to Bolt Associates, Inc. Airgun apparatus providing high strength and high pressure capabilities. 4,271,924, Cl. 181-120.000.

Chemie Linz Aktiengesellschaft: *See*—
Pieh, Stefan; and Czepel, Hubert, 4,272,430, Cl. 260-39.00R.

Chemische Werke Huls AG: *See*—
Capelle, Anton; and Scholten, Heinz, 4,272,566, Cl. 427-208.200.

Chemische Werke Huls Aktiengesellschaft: *See*—
Maahs, Gunther; and Rombusch, Konrad, 4,272,633, Cl. 568-364.000.
Ziegenbein, Willi; and Von Praun, Ferdinand, 4,272,502, Cl. 423-488.000.

Chenevert, Donald J.; Grawe, John R.; and McDaniel, John C. Resin blends for improved vesicular systems. 4,272,603, Cl. 430-155.000.

Cheung, Harry: *See*—
Patterson, Michael F.; Cheung, Harry; and Wang, David I. J., 4,272,259, Cl. 55-74.000.

Chevron Research Company: *See*—
King, John M.; and de Vries, Louis, 4,272,387, Cl. 252-46.400.

Chi, Chang S. Process for the low temperature shaping processing of polyethylene terephthalate. 4,272,475, Cl. 264-210.100.

Chikashige, Kiyoshi; and Takahashi, Nagashige, to Kabushiki Kaisha Medos Kenkyusho. Device for bending a medical instrument inserted into the body cavity. 4,271,845, Cl. 128-756.000.

Chimica Bulciago S.r.l.: *See*—
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Guiliano, 4,272,454, Cl. 260-544.00N.

Chin, Albert K.: *See*—
Fogarty, Thomas J.; and Chin, Albert K., 4,271,839, Cl. 128-344.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt: *See*—
Szejtli, Jozsef; Tetenyi nee Erdosi, Magda; and Tetenyi, Peter, 4,272,276, Cl. 71-76.000.

Chinook Manufacturing Co.: *See*—
Johnson, William R., 4,271,815, Cl. 126-121.000.

Choay, Jean: *See*—
Chedid, Louis; Choay, Jean; Lederer, Edgar; Lefrancier, Pierre; Parant, Monique; and Parant, Francine, 4,272,524, Cl. 424-177.000.

Christenson, Philip A.: *See*—
Willis, Brian J.; Christenson, Philip A.; and Mack, Robert, 4,272,412, Cl. 252-522.00R.

Christian, Fredrick W., III. Adapter for adjustable hospital beds. 4,271,545, Cl. 5-66.000.

Chung, Yun H., to International Automated Machinery, Inc. Machine and method for forming, filling, and sealing packages of laminated sheet material. 4,271,739, Cl. 83-175.000.

Ciba-Geigy AG: *See*—
Davis, Boyce I. D.; and Clubley, Brian G., 4,272,427, Cl. 260-30.60R.

Ciba-Geigy Corporation: *See*—
Babler, Fridolin, 4,272,298, Cl. 106-309.000.
Haas, Georges; and Rossi, Alberto, 4,272,547, Cl. 424-311.000.
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,272,281, Cl. 71-90.000.

Cibie Projecteurs: *See*—
Fratty, Hector, 4,272,801, Cl. 362-336.000.

Cimochowski, Anthony E., to Johns-Manville Corporation. Heater element supports for use with fibrous block insulations. 4,272,638, Cl. 13-25.000.

Citizen Watch Co., Ltd.: *See*—
Kasama, Noriyuki; and Ichikawa, Singo, 4,272,838, Cl. 368-88.000.
Tamaru, Munetaka; Natori, Minoru; and Yamaguchi, Sizuo, 4,272,836, Cl. 368-74.000.
Togashi, Seigo; Suzuki, Takaharu; and Aoyama, Takaaki, 4,272,162, Cl. 350-349.000.

Clark, Ian S. R.; and Pargeter, John K., to International Nickel Co., Inc., The. Process for producing metal powder. 4,272,463, Cl. 264-12.000.

Clarke, Philip C.: *See*—
Millward, Thomas H.; Wylie, David G.; and Clarke, Philip C., 4,271,717, Cl. 74-467.000.

Classon, Ake, to ASEA Aktiebolag. Gas-insulated high-voltage bushing with shield electrode embedded in an annular insulating body. 4,272,642, Cl. 174-31.00R.

Clausen, Anthony R., to Pitman-Moore, Inc. Dispensing of fluent materials. 4,271,988, Cl. 222-214.000.

Cleland, David B.: *See*—
Jackson, Peter W.; Anderson, David K. C.; and Cleland, David B., 4,272,005, Cl. 228-107.000.

Clifton, Ronald M. Sewage system with comminutor. 4,271,540, Cl. 4-319.000.

Clubley, Brian G.: *See*—
Davis, Boyce I. D.; and Clubley, Brian G., 4,272,427, Cl. 260-30.60R.

Coal Industry (Patents) Limited: *See*—
Pearey, John T., 4,272,129, Cl. 299-31.000.

Coalinga Corporation: *See*—
Slagle, Grady M., Jr.; and Thomas, Donald O., Jr., 4,271,903, Cl. 166-129.000.

Coates, Ralph L., to Mountain Fuel Resources, Inc. Apparatus for gasification of carbonaceous solids. 4,272,255, Cl. 48-63.000.

Cobb, Wayne E. Spreader for and operative by a granular product. 4,272,028, Cl. 239-687.000.

Cobler, John A.: *See*—
Schulz, Johann G. D.; and Cobler, John A., 4,272,253, Cl. 44-51.000.

Cochran, Donald D., to National Can Corporation. Mold for producing extra thin walled plastic containers. 4,272,233, Cl. 425-526.000.

Coherent, Inc.: *See*—
Johnston, Thomas F., Jr.; and Proffitt, William P., 4,272,158, Cl. 350-375.000.

Coin Acceptors, Inc.: *See*—
Heim, Edward L., 4,271,952, Cl. 194-97.00R.

Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., to United States of America, Interior. Electrowinning of lead from H_2SiF_6 solution. 4,272,340, Cl. 204-114.000.

Cole, James C.; and Cronenwett, George F., to HPM Corporation. Automatic part loader unit for multi-cavity rotor die and method of operation. 4,271,895, Cl. 164-109.000.

Coles, Richard J., Jr.: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Coles, Viola C.: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Colgate-Palmolive Company: *See*—
Bauman, Robert A., 4,272,413, Cl. 252-525.000.
Gaffar, Abdul, 4,272,512, Cl. 424-49.000.
Gaffar, Abdul, 4,272,513, Cl. 424-52.000.

Collin, Lars T., to Lars Collin Consult AB. Two-way power transferring reduction gear of the epicyclic type. 4,271,940, Cl. 192-4.00C.

Collin, Vittorino, to Ing. C. Olivetti & C., S.p.A. Fusing rolls fixing unit for copying machine. 4,272,666, Cl. 219-216.000.

Collins, Floyd A.; and Spychalski, Joseph L., to American Can Company. Apparatus for reforming round cans into rectangular cans. 4,271,777, Cl. 113-1.00G.

Collins, Floyd K., to GTE Products Corporation. One piece astigmatic grid for color picture tube electron gun and method of making same. 4,272,700, Cl. 313-458.000.

Collins, Stuart A., Jr.; Sengupta, Uday K.; and Gerlach, Ulrich H., to Ohio State University, The. Multi-stable optical system. 4,272,157, Cl. 350-374.000.

Combs, Daniel J., to Oxy Metal Industries Corporation. Composition and method for electrodeposition of copper. 4,272,335, Cl. 204-52.00R.

Combustion Engineering, Inc.: *See*—
Betancourt, George N.; and Etzel, William W., 4,272,321, Cl. 176-87.000.
Seaton, William W., 4,271,994, Cl. 222-602.000.

Cometta, Robert A.: *See*—
Compton, James B.; Cometta, Robert A.; and Culmer, Daniel D., 4,272,775, Cl. 357-29.000.

Compagnie Generale des Etablissements Michelin: *See*—
Pommier, Jean, 4,271,889, Cl. 152-353.00R.
Pommier, Jean, 4,271,890, Cl. 152-352.00R.
Pommier, Jean, 4,271,891, Cl. 152-352.00R.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Biron, Gerard, 4,272,789, Cl. 358-282.000.

Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme): *See*—
Giraud, Georges, 4,272,758, Cl. 340-310.00A.

Compton, James B.; Cometta, Robert A.; and Culmer, Daniel D., to National Semiconductor Corporation. Laser trim protection process and structure. 4,272,775, Cl. 357-29.000.

Compton, Leslie E., to Occidental Research Corporation. Method for reducing the nitrogen content of shale oil. 4,272,361, Cl. 208-254.00R.

Compudrive Corporation: *See*—
Ryffel, Henry, 4,271,726, Cl. 74-805.000.

Congdon, Jon M.: *See*—
Galbraith, Lyle D.; Stewart, Hudson; and Congdon, Jon M., 4,272,301, Cl. 134-8.000.

Conn, Shepard; and Kushner, Arnold, to KCDP Corporation. Fluid-expansible contraceptive tampon and applicator. 4,271,835, Cl. 128-270.000.

Conoco, Inc.: *See*—
Wingrave, James A., 4,271,698, Cl. 73-74.000.

Construction Specialties, Inc.: *See*—
Lynn-Jones, David M., 4,271,650, Cl. 52-395.000.

Container Corporation of America: *See*—
Thor, David L., 4,271,972, Cl. 215-251.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Bachmann, Willi; Thielemann, Klaus; and von der Wall, Klaus, 4,271,886, Cl. 152-209.00R.

Contraves Goerz Corporation: *See—*
Gallagher, Gerard A., 4,272,807, Cl. 363-126.000.

Convergence Corporation: *See—*
Bates, George W., 4,272,790, Cl. 360-14.000.

Convex Corporation: *See—*
Turner, James F., 4,272,738, Cl. 333-28.00R.

Conwed Corporation: *See—*
Slocumb, Robert C., 4,272,468, Cl. 264-53.000.

Cook, Frank T.; Baugh, Daniel W., Jr.; and Chambers, Robert V., Jr., to Dow Chemical Company, The. Production of monoalkyleneglycols, monoalkanolamines and alkylenediamine. 4,272,455, Cl. 564-503.000.

Cook, John W.; and Drankhan, Voit C., to Westinghouse Electric Corp. Strip break detector system. 4,272,688, Cl. 307-123.000.

Cook, Sharon: *See—*
Suligoy, Diane; and Cook, Sharon, 4,271,731, Cl. 81-177.0ST.

Cooley, James; and Fogle, Ozzie. Heat resistant decorative laminate. 4,272,581, Cl. 428-328.000.

Cooper, Wayne L., to Hi-Flier Manufacturing Company, The. Kite construction. 4,272,044, Cl. 244-153.00R.

Corbin, Alan: *See—*
Yardley, John P.; and Corbin, Alan, 4,272,432, Cl. 260-112.50R.

Cornelius, Erwin D., to M & W Gear Company. Drawbar for mounting multiple farm implement tool bars. 4,272,097, Cl. 280-411.00A.

Corona, Stephen C.: *See—*
Lehman, Richard F.; and Corona, Stephen C., 4,272,188, Cl. 355-68.000.

Corse, Louis G., to Machines Chambon. Printing machines of the offset type. 4,271,760, Cl. 101-142.000.

Cosden Technology, Inc.: *See—*
Mayes, Warden W., 4,272,402, Cl. 252-417.000.
Watson, James M., 4,272,344, Cl. 202-154.000.

Cotic, Dennis J., to General Electric Company. Modular array radiation detector. 4,272,680, Cl. 250-375.000.

Cotonificio Cantoni S.p.A.: *See—*
Durville, Gerard; Moulin, Michel; Ramseier, Serge; and Zurcher, Erwin, 4,271,568, Cl. 26-9.000.

Cottrell, Edward D., to Champion International Corporation. Stick dispenser. 4,271,978, Cl. 221-243.000.

Coulter Systems Corporation: *See—*
DiNallo, Samuel R., Sr.; and Najarian, Leon K., 4,271,785, Cl. 118-661.000.

Cowie, David B. Outboard motor clutches. 4,271,781, Cl. 440-113.000.

Cox, Daniel E.; Kane, Susan M.; and Powers, John V., to International Business Machines Corporation. Bubble device fabrication. 4,272,348, Cl. 204-192.00E.

Crane Limited: *See—*
Bishop, Reginald M., 4,271,863, Cl. 137-557.000.

Crawford, John G., to General Electric Company. Dishwasher fill level control arrangement. 4,271,861, Cl. 137-387.000.

Creech, William C. Portable surface grinding machine. 4,271,638, Cl. 51-241.00S.

Crete, Micheline M. J.; Crete, Pierre G. C.; and Pascod nee Pacescu, Aurelie. Perfumed fireproofing composition. 4,272,385, Cl. 252-608.000.

Crete, Pierre G. C.: *See—*
Crete, Micheline M. J.; Crete, Pierre G. C.; and Pascod nee Pacescu, Aurelie, 4,272,385, Cl. 252-608.000.

Crisalli, Emanuel. Method and elements for the fabrication of a prosthetic dental appliance. 4,272,241, Cl. 433-171.000.

Croci, Marco; and Maruzzelli, Gennaro, to Glaxo Group Limited. Manufacture of semi-synthetic penicillin antibiotics. 4,272,438, Cl. 260-239.100.

Crocker, Zenas, to Synergistics Chemicals Limited. Process for producing articles of ultra high molecular weight high density polyethylene. 4,272,474, Cl. 264-176.00R.

Crom Corporation, The: *See—*
Balck, Lars, Jr., 4,271,647, Cl. 52-169.400.

Cronenwett, George F.: *See—*
Cole, James C.; and Cronenwett, George F., 4,271,895, Cl. 164-109.000.

Crooks, Melvin L. Building construction. 4,271,645, Cl. 52-81.000.

Crosby, John B., to Beckman Instruments, Inc. Multi-contact rotary switch. 4,272,658, Cl. 200-6.00B.

Crosby, Philip C. S.; Barrios, Philip A.; and Perry, Ronald R., to Harvey Hubbell Incorporated. Flexible wiring system and components therefor. 4,272,689, Cl. 307-147.000.

Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Electrochemical sensor for measuring concentrations of species in a fluid mixture, of the type comprising a partial-pressure internal reference electrode. 4,272,350, Cl. 204-195.00S.

Croslin, Michael E., to Medtek Corporation. Method and apparatus for performing non-invasive blood pressure and pulse rate measurements. 4,271,844, Cl. 128-681.000.

Crostack, Horst-Artur, to Karl Deutsch Pruf-und Messgerate. Method and device for generating acoustic pulses. 4,271,705, Cl. 73-602.000.

Crowley, Kenneth H., to Gunson's Sortex Limited. Sorting machine. 4,271,966, Cl. 209-576.000.

Cubbison, Richard J., Jr., to Bell Telephone Laboratories, Incorporated. Single amplifier variable gyrator. 4,272,735, Cl. 331-108.00B.

Cullen, John S.; and Huber, Paul W., to Multiform Desiccant Products, Inc. Adsorbent package. 4,272,264, Cl. 55-387.000.

Cullity, Richard E., to Mark Industries. Rotatable work platform. 4,271,926, Cl. 182-2.000.

Culmer, Daniel D.: *See—*
Compton, James B.; Cometta, Robert A.; and Culmer, Daniel D., 4,272,775, Cl. 357-29.000.

Cunning, Joseph M., to Bird & Son, Inc. Gutter strainer. 4,272,370, Cl. 210-162.000.

Cuny, Henri E. E. M. Vehicle provided with an inertia reel seat belt. 4,272,104, Cl. 280-801.000.

Curzio, Frederick H., to Textile Products, Inc. Graphite fiber alignment process and apparatus. 4,271,570, Cl. 28-290.000.

Cutter Laboratories, Inc.: *See—*
Zuffi, Timothy R., 4,272,521, Cl. 424-85.000.

Czepel, Hubert: *See—*
Pieh, Stefan; and Czepel, Hubert, 4,272,430, Cl. 260-39.00R.

DAF Indal Ltd.: *See—*
Wood, Charles; and Fralick, Richard, 4,271,542, Cl. 4-495.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Mizuno, Shogo; Shimomura, Kyoichi; and Kobayashi, Michiaki, 4,272,292, Cl. 106-22.000.

Dai Nippon Printing Co. Ltd.: *See—*
Tsuda, Takeshi; Kubota, Michio; Takagi, Kazuhiro; Shimose, Masahiro; Imamura, Yasuo; and Kato, Kazunori, 4,271,571, Cl. 29-25.180.

Daido Tokushuko Kabushiki Kaisha: *See—*
Yajima, Tadamasa; Kitagawa, Shuzo; and Hata, Hiromi, 4,272,287, Cl. 75-60.000.

Daig Corporation: *See—*
Little, Richard L., 4,271,846, Cl. 128-785.000.

Daimler-Benz Aktiengesellschaft: *See—*
Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, 4,271,764, Cl. 104-247.000.
Schmid, Walter; Breitschwerdt, Werner; Huber, Guntram; and Reidelbach, Willi, 4,272,103, Cl. 280-751.000.
Withalm, Gert; and Hiereth, Hermann, 4,271,672, Cl. 60-602.000.

Dainippon Ink & Chemicals Inc.: *See—*
Hirano, Norimasa; and Yamauchi, Yuzuru, 4,272,423, Cl. 260-29.6TA.

D'Alba, Anthony R., to Trico Products Corporation. Windshield wiper blade refill assembly and adapter clips. 4,271,558, Cl. 15-250.420.

Daly, James C.: *See—*
Chatfield, John F., Jr.; Bryant, Donald C.; Daly, James C.; and Kamila, Friedolf, 4,271,909, Cl. 169-70.000.

Dana Corporation: *See—*
Campbell, Chris A., 4,271,722, Cl. 74-710.500.
Kishline, Alan R., 4,271,922, Cl. 180-254.000.
Orzel, Edward S., 4,272,659, Cl. 200-82.00D.

D'Andrea, Mark J.: *See—*
Moro, Daniel G.; Griffin, Gary A.; and D'Andrea, Mark J., 4,272,518, Cl. 424-81.000.

Danfoss A/S: *See—*
Vind, Holger V., 4,272,714, Cl. 318-783.000.

D'Angelo, Joseph J.; and D'Angelo, Joseph J., Jr. Method and apparatus for automatically labelling containers. 4,272,311, Cl. 156-215.000.

D'Angelo, Joseph J., Jr.: *See—*
D'Angelo, Joseph J.; and D'Angelo, Joseph J., Jr., 4,272,311, Cl. 156-215.000.

Daniel, Chelliah, to Air Products and Chemicals, Inc. Stable molybdenum catalysts for high conversion of C^3 and C^4 olefins to corresponding unsaturated aldehydes and acids. 4,272,408, Cl. 252-437.000.

Danko, Arthur J.: *See—*
Hammer, Victor S., Jr.; Danko, Arthur J.; and Heard, Perry J., 4,272,111, Cl. 292-17.000.

D'Antonio, Joseph P., to Du Pont de Nemours, E. I., and Company. Method of monitoring oxygen concentrations in gas streams. 4,272,249, Cl. 23-232.00E.

Darlington, William B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali electrolysis cell. 4,272,337, Cl. 204-98.000.

Data Card Corporation: *See—*
Schroeder, Marvin C.; and Stastny, Edwin O., 4,272,202, Cl. 400-208.000.

Data Packaging Corporation: *See—*
Butz, David E., 4,271,963, Cl. 206-444.000.
Lyman, George F., 4,271,618, Cl. 40-152.000.

Daugherty, Richard G.: *See—*
Tippmann, Joseph R.; and Daugherty, Richard G., 4,271,622, Cl. 40-606.000.

Davert, Edward J.; and Gants, Wilbur L., to Boeing Company, The. Remote control countersink adjustment. 4,272,215, Cl. 408-14.000.

Davis, Boyce I. D.; and Clubley, Brian G., to Ciba-Geigy AG. Plasticized PVC. 4,272,427, Cl. 260-30.60R.

Davis, Charles J., to General, Inc., The. Boom apparatus. 4,272,222, Cl. 414-694.000.

Davis, Daniel: *See—*
Miller, Coleman J.; and Davis, Daniel, 4,272,770, Cl. 343-782.000.

Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., to Monsanto Company. Conversion of carbon-containing materials to synthesis gas. 4,272,399, Cl. 252-373.000.

Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., to Monsanto Company. Conversion of carbon-containing materials to carbon monoxide. 4,272,555, Cl. 423-415.00A.

Davis, Max G., Jr.; and Mueller, Charles M., to Texas Instruments Incorporated. Information storage system and recording cartridge having precise alignment features. 4,272,795, Cl. 360-99.000.

Davydov, Alexandr N.: *See—*
Samokhin, Andrei V.; Bekker, Boris G.; and Davydov, Alexandr N., 4,272,163, Cl. 350-357.000.
Day, W. Baldwin; and Strenglein, Harry F., to Sperry Corporation. Thin film resistor microwave noise generator. 4,272,731, Cl. 331-78.000.
Dean, Arthur L.; and Wine, William L., to FMC Corporation. Heavy duty two mass vibratory machine. 4,272,366, Cl. 209-364.000.
DeAngelis, Eugene R. Sawing machine. 4,271,738, Cl. 83-174.000.
deBuhr, Harold E., to Deere & Company. Harvester header with rearwardly extended crop divider. 4,271,661, Cl. 56-98.000.
Decker, Charles R., III, to Impac Inc. Solar heating apparatus. 4,271,824, Cl. 126-449.000.
Deere & Company: *See—*
deBuhr, Harold E., 4,271,661, Cl. 56-98.000.
Hutchinson, Eugene B.; and Van Auwelaer, James M., 4,271,956, Cl. 198-613.000.
McConnell, Kenneth C., 4,271,659, Cl. 56-13.300.
Ochsner, Jon K., 4,271,921, Cl. 180-89.120.
Schafer, Richard A., 4,271,910, Cl. 172-7.000.
Termont, Charles G., 4,272,131, Cl. 303-3.000.
Deguchi, Ryuichi: *See—*
Nakanishi, Kiyoshi; Okumura, Takeshi; Deguchi, Ryuichi; and Tanahashi, Toshio, 4,271,803, Cl. 123-432.000.
Deibert, Daniel T. Knee brace. 4,271,831, Cl. 128-80.00C.
Deigner, Paul: *See—*
Steck, Werner; Loeser, Werner; Steuerwald, Manfred; Wunsch, Gerd; and Deigner, Paul, 4,272,563, Cl. 427-130.000.
Delta Dynamics Corporation: *See—*
Haugland, Samuel R., 4,272,057, Cl. 251-315.000.
del Valle, Jaime L., to Master Modular Homes, Inc. Method and apparatus for pre-casting steel reinforced concrete box-like modules. 4,272,050, Cl. 249-144.000.
DeMarinis, Robert M., to SmithKline Corporation. 3,3'-Bis-methylene-1,3'-benzo-thiazine compounds. 4,272,531, Cl. 424-246.000.
Dempster, Philip T.; and Pun, John Y., to Cavitron Corporation. Gas flow measuring system. 4,271,701, Cl. 73-861.420.
Deng, EH: *See—*
Hammond, James D.; and Deng, EH, 4,272,269, Cl. 62-17.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Ando, Toshihiro; Ohgi, Hiroshi; and Kishi, Ikuji, 4,272,586, Cl. 428-419.000.
Denman, Dennis, to Matthias Spencer & Sons Limited. Tool holders. 4,271,735, Cl. 82-36.00R.
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, to Diamond Shamrock Technologies, S.A. Electrodes for electrolytic processes. 4,272,354, Cl. 204-290.00R.
Designs for Vision, Inc.: *See—*
Feinbloom, Richard E., 4,272,161, Cl. 350-320.000.
deSolms, S. Jane: *See—*
Woltersdorf, Otto W., Jr.; deSolms, S. Jane; and Smith, Robert L., 4,272,537, Cl. 424-249.000.
Dessau, Ralph M., to Mobil Oil Corporation. Concentration, separation and recovery of precious metals. 4,272,288, Cl. 75-101.0BE.
Dethlefsen, Rolf, to Gould Inc. High speed vacuum interrupter. 4,272,661, Cl. 200-144.00B.
Detwiler, Timothy, to E. Edelmann & Co. Combination pressure release cooling cap and recovery of coolant. 4,271,976, Cl. 220-206.000.
Deutsch, Simon, to Peerless Instrument Co., Inc. Electronic calculator. 4,272,826, Cl. 364-709.000.
de Vecchis, Michel: *See—*
Hulin, Jean P.; and de Vecchis, Michel, 4,272,472, Cl. 264-146.000.
Devine Lighting, Incorporated: *See—*
Garcia, Octavio G.; and Lambert, Peter A., 4,271,621, Cl. 40-570.000.
de Vries, Louis: *See—*
King, John M.; and de Vries, Louis, 4,272,387, Cl. 252-46.400.
de Zepeda-Bermudez, Rocio S. Decorative parchment paper. 4,272,580, Cl. 428-153.000.
Diamond, George B. Low pressure dispensing. 4,271,991, Cl. 222-389.000.
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., to Transidyne General Corporation. Method and apparatus for electrochemical measurement. 4,272,245, Cl. 23-230.00B.
Diamond, Kenneth B.; and Diamond, Lynda R. Apparatus for adapting an office machine to one-handed operation. 4,272,203, Cl. 400-272.000.
Diamond, Lynda R.: *See—*
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Diamond Shamrock Corporation: *See—*
Baczek, Stanley K.; and McCain, G. Howard, 4,272,560, Cl. 427-58.000.
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Diamond Shamrock Technologies, S.A.: *See—*
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,272,354, Cl. 204-290.00R.
Dickhart, William W., III, to Budd Company, The. Railway car tilting stabilizing system. 4,271,765, Cl. 105-164.000.
Didier Engineering GmbH: *See—*
Tettweiler, Robert; and Ergun, Hayri, 4,272,323, Cl. 201-6.000.
Diermayer, Werner; and Kutzner, Luitpold. Vent control arrangement for combustion apparatus. 4,272,013, Cl. 236-1.00G.
Diesel Kiki Co., Ltd.: *See—*
Kaibara, Nobuhiro; and Kobayashi, Masayoshi, 4,271,806, Cl. 123-502.000.
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,271,805, Cl. 123-459.000.
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Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, to Thomson-CSF. Optical-pickup coordinatometer. 4,272,676, Cl. 250-221.000.
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Cammarano, Armando S.; DiGiacomo, Giulio; and Drofitz, Stephen S., Jr., 4,272,722, Cl. 324-76.00R.
Digiovanni, Joseph J., to Itek Corporation. Microwave frequency synthesizer utilizing a combination of a phase locked loop and frequency translation techniques. 4,272,730, Cl. 331-16.000.
Dijkstra, Rinse: *See—*
Lippits, Gerardus J. M.; van den Broek, Arnoldus J. M.; and Dijkstra, Rinse, 4,272,574, Cl. 428-64.000.
DiMarchi, Silvio J.: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; and DiMarchi, Silvio J., 4,272,672, Cl. 219-523.000.
Dimitrov, Milko D., to SK "Pamukotex". Spool-charging device for automatic-winding-machine magazines. 4,272,034, Cl. 242-35.50R.
DiNallo, Samuel R., Sr.; and Najarian, Leon K., to Coulter Systems Corporation. Apparatus for developing latent electrostatic images. 4,271,785, Cl. 118-661.000.
Director-General of Agency of Industrial Science and Technology: *See—*
Imamura, Juichi, 4,272,634, Cl. 568-432.000.
Disdier, Andre: *See—*
Bernard, Andre; Disdier, Andre; and Royer, Michel, 4,272,448, Cl. 260-448.00R.
Dixon, Kenneth W.; and Hoffstadt, Frederick A., to Calgon Corporation. Frother for coal flotation. 4,272,364, Cl. 209-166.000.
Dobbie, John G. Automatic musical tuning device. 4,271,746, Cl. 84-454.000.
Docx, Albert G. Furnace muffles and furnaces. 4,272,670, Cl. 219-390.000.
Doering, John N.: *See—*
Bauer, Andrew J., Jr.; and Doering, John N., 4,272,212, Cl. 404-72.000.
Dolidovich, Elena F.: *See—*
Belkevich, Peter I.; Buslovich, Solomon J.; Dolidovich, Elena F.; Kaganovich, Fanya L.; Komov, Oktyabr P.; and Timofeeva, Ljudmila P., 4,272,527, Cl. 424-195.000.
Dominguez, Richard J. G.; and Rice, Doris M., to Texaco Development Corp. Heat stable reaction injection molded elastomers. 4,272,618, Cl. 521-160.000.
Dona, Marinus J. J., to U.S. Philips Corporation. Speed- or movement-reducing drive. 4,271,713, Cl. 74-198.000.
Dotson, Ronald L.: *See—*
Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., 4,272,338, Cl. 204-98.000.
Dow Chemical Company, The: *See—*
Ahlstrom, Ross C., Jr.; and Meppen, Craig E., 4,272,481, Cl. 422-62.000.
Cook, Frank T.; Baugh, Daniel W., Jr.; and Chambers, Robert V., Jr., 4,272,455, Cl. 564-503.000.
Lane, George A.; and Rossow, Harold E., 4,272,390, Cl. 252-70.000.
Lane, George A.; and Rossow, Harold E., 4,272,391, Cl. 252-70.000.
Lane, George A.; and Rossow, Harold E., 4,272,392, Cl. 252-70.000.
Martin, Robert C., 4,272,384, Cl. 252-8.55R.
McFadden, Russell T.; Krause, Reuben L.; and Young, R. Gregg, 4,272,621, Cl. 525-355.000.
Siegel, Sanford A.; Yoshimine, Masao; and Kao, Che-I, 4,272,635, Cl. 568-776.000.
Thompson, Leonard R.; and Kearney, J. Kevin, 4,272,636, Cl. 568-776.000.
Dow Corning Corporation: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,272,415, Cl. 260-18.00S.
Homan, Gary R.; and Lee, Chi-Long, 4,272,623, Cl. 528-15.000.
Downing, James R. Surface floodlight assembly. 4,272,799, Cl. 362-145.000.
Draftex Development: *See—*
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Dragerwerk Aktiengesellschaft: *See—*
Huneke, Karl-Heinz; and Laufenberg, Wilfried, 4,272,479, Cl. 422-57.000.
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Cook, John W.; and Drankhan, Voit C., 4,272,688, Cl. 307-123.000.
Draper, Ellsworth R., Jr.; and Jones, Kenneth L., to Procter & Gamble Company, The. Antistatic, fabric-softening detergent additive. 4,272,386, Cl. 252-8.600.
Dressel, Michael O., to United States of America, Interior. Automatic feed and rotational speed control system of a hydraulic motor operated drill. 4,271,914, Cl. 173-158.000.
Dresser Industries, Inc.: *See—*
Lawhon, Clyde E., 4,272,063, Cl. 266-286.000.
Drofitz, Stephen S., Jr.: *See—*
Cammarano, Armando S.; DiGiacomo, Giulio; and Drofitz, Stephen S., Jr., 4,272,722, Cl. 324-76.00R.
Dubois, Jean-Claude; Eranian, Armand; and Paimblant, Paul, to Thomson-CSF. Process for gluing two members using a photopolymerizable substance. 4,272,589, Cl. 428-442.000.

Du Bose, Harold D.: *See—*
Jarrett, Steven M.; and Du Bose, Harold D., 4,272,734, Cl. 331-94.50S.

Dubourg, Jean-Pierre, to Patpan Inc. Apparatus for drying flat articles of porous material under vacuum. 4,271,600, Cl. 34-92.000.

Dubuque, Gerald P. Process for fabricating articles from ultra high molecular weight polymer material. 4,271,851, Cl. 264-328.

Duchene, Georges, to Agence Nationale de Valorisation de la Recherche (ANVAR). Device for collecting solar energy. 4,271,826, Cl. 126-450.000.

Ducros, Luc; and Navarro, Roger, to Pierre Fabre S.A. Device for dispensing two pasty substances in adjustable proportions. 4,271,984, Cl. 222-94.000.

Dudgeon, Charles D., to General Electric Company. Method of making a bonded structure of magnet wire. 4,272,310, Cl. 156-172.000.

Duggan, Angelina J.; and Webb, Robert L., to SmithKline Corporation. Intermediates for preparing hydroxyphenylpyridazinones. 4,272,440, Cl. 260-343.600.

Duill, Helmut; and Ansen, Jakob, to Klockner-Humboldt-Deutz AG. Method and apparatus for the adjustment of a definite position of rest of a rotary tube. 4,272,710, Cl. 318-470.000.

Duncan, Farris N.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,272,009, Cl. 229-41.00R.

Dunlop Limited: *See—*
Udall, William S.; and Martin, John, 4,271,884, Cl. 157-1.000.

Dunn, Larry P.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Bergna, Horacio E., 4,272,409, Cl. 252-455.00R.
D'Antonio, Joseph P., 4,272,249, Cl. 23-232.00E.
Jones, Richard H., 4,272,429, Cl. 260-37.00N.
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Reitz, Charles F., 4,271,900, Cl. 165-162.000.

Dupont, Regis: *See—*
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Durando, Pierre: *See—*
Joubert, Philippe; Durando, Pierre; and Fleury, Daniel, 4,271,550, Cl. 9-8.00R.

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Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,272,365, Cl. 209-223.00R.

Durkoppwerke GmbH: *See—*
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Durville, Gerard; Moulin, Michel; Ramseier, Serge; and Zurcher, Erwin, to Cotonificio Cantoni S.p.A. Method of cutting columns of thread loops. 4,271,568, Cl. 26-9.000.

Duval Corporation: *See—*
Lamb, Frank E., 4,272,341, Cl. 204-118.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Bendler, Hellmut; Homburg, Axel; and Penner, Horst, 4,271,747, Cl. 411-20.000.

Dynatron/Bondo Corporation: *See—*
Niksich, Eugene J.; and Underwood, J. Larry, 4,271,982, Cl. 222-83.000.

E. D. Bullard Company: *See—*
Moretti, Anthony L., 4,271,833, Cl. 128-201.290.

E. Edelmann & Co.: *See—*
Detwiler, Timothy, 4,271,976, Cl. 220-206.000.

E. T. Oakes Limited: *See—*
Bouette, David W., 4,272,558, Cl. 426-660.000.

Earnest, Ernest R., to Hydragon Corporation. Turbine engine with exhaust gas recirculation. 4,271,664, Cl. 60-39.18R.

Eastman, Jay M.; and Miller, Theodore L., to United States of America, Energy. Method and apparatus for timing of laser beams in a multiple laser beam fusion system. 4,272,193, Cl. 356-349.000.

Eastman Kodak Company: *See—*
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,272,434, Cl. 260-156.000.
Jessop, Thomas C.; and Helfer, Jeffrey L., 4,272,482, Cl. 422-65.000.
Kim, Sang H.; and Chang, Hao-jan, 4,272,328, Cl. 204-1.00T.
McCombs, Charles A.; and Foster, Charles H., 4,272,444, Cl. 260-397.300.
Metzger, Lenard M., 4,272,806, Cl. 363-21.000.
Sherman, Larry; and Niedospial, John J., 4,272,035, Cl. 242-71.100.
Webster, Frank G.; Regan, Michael T.; and Rossi, Louis J., 4,272,595, Cl. 430-37.000.

Eaton Corporation: *See—*
Bridge, Erland T., 4,271,946, Cl. 192-58.00B.
Morscheck, Timothy J., 4,271,724, Cl. 74-720.000.

Ebara Corporation: *See—*
Takao, Syosuke; Kikuchi, Gunpei; Sekiguchi, Masuo; and Kawauchi, Shinji, 4,271,725, Cl. 74-730.000.

Ebauches Electroniques SA: *See—*
Nickles, Francois, 4,272,841, Cl. 368-224.000.

Eberhard Hoesch & Sohne GmbH & Co.: *See—*
Schotten, Alfons, 4,272,376, Cl. 210-230.000.

Eblen, Ewald: *See—*
Links, Heinz; Kopse, Odon; and Eblen, Ewald, 4,271,807, Cl. 123-506.000.

Echterling, Eugene, to Louis Marx & Co., Inc. Doll high chair and swing. 4,271,627, Cl. 46-15.000.

Eckberg, Edwin E., to Eckberg, Edwin E. D.C. Voltage fluorescent lamp. 4,272,703, Cl. 315-205.000.

Edington, Edwin T.; and White, Alan C., to John Wyeth & Brother Limited. Novel pyridine derivatives. 4,272,628, Cl. 546-284.000.

Efros, Boris, to Energenic Propulsions, Ltd. Powerful oscillating pedal bicycle. 4,272,096, Cl. 280-255.000.

Eggerding, Carl L.; Gonzales, Frank, Jr.; and Niklewski, Jerzy B., to International Business Machines Corporation. Process for forming mullite. 4,272,500, Cl. 423-327.000.

Egigian, Robert S. Anchor mat. 4,272,575, Cl. 428-83.000.

Eibe, Werner W., to Blaw-Knox Foundry & Mill Machinery, Inc. Coil rotating cooling conveyor system. 4,271,959, Cl. 198-777.000.

Eicken, Karl: *See—*
Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,272,282, Cl. 71-92.000.

Eisele, Hermann: *See—*
Knapp, Heinrich; Eisele, Hermann; and Kammerer, Werner, 4,271,794, Cl. 123-454.000.

Eitzinger, Robert, to Mid-West Automation, Inc. Apparatus for inserting multiple terminals into a holder. 4,271,581, Cl. 29-564.600.

Elb-Werkzeug-und Maschinenbau GmbH: *See—*
Geibel, Horst, 4,271,637, Cl. 51-92.00R.

ELBAK Batteriewerke Gesellschaft mbH: *See—*
Frieser, Edwin; and Novotny, Jurgen, 4,271,980, Cl. 221-297.000.

Elbow, William T. Tide time indicator. 4,272,107, Cl. 283-1.00A.

Electric Power Development Co., Ltd.: *See—*
Takahashi, Kazuyoshi; and Tanaka, Hiromi, 4,272,497, Cl. 423-239.000.

Electric Power Research Institute: *See—*
Sokoly, Theodore O.; and Niedzialkowski, John, 4,272,411, Cl. 252-516.000.

Electronics Corporation of America: *See—*
Weiner, Nathan K.; and Ketchum, David D., 4,272,725, Cl. 324-415.00R.

Eli Lilly and Company: *See—*
Cella, John A.; Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; and Vargas, Ovidio, 4,272,544, Cl. 424-273.00R.
Herrold, Anne M.; and Vargas, Ovidio, 4,272,519, Cl. 424-83.000.

Ellion, M. Edmond; Putt, J. Ward; and Montich, John J., to Hughes Aircraft Company. Liquid-vapor separator. 4,272,257, Cl. 55-38.000.

Ellis, Christopher R.: *See—*
Hatch, Donald; Ellis, Christopher R.; Gibbon, Richard H.; and Stirling, Walter R., 4,271,937, Cl. 188-264.00F.

Elmore, Austin E.: *See—*
Herr, Myron R.; and Elmore, Austin E., 4,272,764, Cl. 340-575.000.

EMAC AB: *See—*
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Emhart Industries, Inc.: *See—*
Trahan, Albert J.; Beckwith, Bruce R.; and Murray, David B., 4,272,273, Cl. 65-167.000.

Enders, Edward O.: *See—*
Templin, Harry W.; and Enders, Edward O., 4,271,663, Cl. 59-84.000.

Endo, Terumi: *See—*
Hukagawa, Hitoshi; Shimada, Isao; Naruo, Masayuki; and Endo, Terumi, 4,272,671, Cl. 219-505.000.

Energenic Propulsions, Ltd.: *See—*
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Enomoto, Junzo: *See—*
Yamazaki, Hitoshi; Ito, Hiroshi; Takeda, Toshiyuki; and Enomoto, Junzo, 4,272,421, Cl. 260-29.2EP.

Enzer, Steven E.: *See—*
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., 4,272,245, Cl. 23-230.00B.

Epifanov, Valery S.: *See—*
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,272,033, Cl. 242-7.05B.

Equipment Company of America: *See—*
Garcia, Jose M., 4,272,220, Cl. 414-607.000.

Eranian, Armand: *See—*
Dubois, Jean-Claude; Eranian, Armand; and Paimblant, Paul, 4,272,589, Cl. 428-442.000.

Erb, Robert A., to Franklin Institute, The. Unitary solar collector panel. 4,271,823, Cl. 126-445.000.

Erbach, Arthur R.: *See—*
Mulee, Dennis L.; Erbach, Arthur R.; and Ray, Frank, 4,271,626, Cl. 43-112.000.

Ergun, Hayri: *See—*
Tettweiler, Robert; and Ergun, Hayri, 4,272,323, Cl. 201-6.000.

Eriksson, Birger; and Bostrom, Gosta, to EMAC AB. Device for dispensing beverages. 4,271,987, Cl. 222-160.000.

Ernst, Rolf; and Ullmann, Roland, to Braun Aktiengesellschaft. Dry shaving apparatus. 4,271,590, Cl. 30-43.920.

Esbitt, Alan S.: *See—*
Visser, Ronald C.; Estep, G. James; and Esbitt, Alan S., 4,272,644, Cl. 174-52.0FP.

Escher Wyss Limited: *See—*
Lehmann, Rolf, 4,271,575, Cl. 29-116.0AD.

ESCO Corporation: *See—*
Jones, Larren F., 4,271,615, Cl. 37-142.00A.

Espenmiller, Howard P., to Black Clawson Company, The. Secondary fiber system. 4,272,315, Cl. 162-4.000.

Esselte Pendaflex Corporation: *See—*
Volk, Heinrich, 4,271,759, Cl. 101-110.000.

Essex Cryogenics of Missouri, Inc.: *See—*
Snyder, Fred P., 4,272,265, Cl. 55-389.000.

Estebanell, Juan B. Comber-cleaner carding device. 4,271,564, Cl. 19-100.000.
Estep, G. James: *See*—
Visser, Ronald C.; Estep, G. James; and Esbitt, Alan S., 4,272,644, Cl. 174-52.0FP.
Ethyl Corporation: *See*—
Huang, Yun-Yang, 4,272,410, Cl. 252-465.000.
Etienne, Michel, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Device for simulating the operation of an accumulator battery, in particular a traction battery for an electric vehicle. 4,272,716, Cl. 320-14.000.
Etoh, Akio, to Niigata Engineering Co., Ltd. Apparatus for maneuvering a ship. 4,271,780, Cl. 114-144.00E.
Etoh, Yukihiro: *See*—
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,271,795, Cl. 123-308.000.
Etzel, William W.: *See*—
Betancourt, George N.; and Etzel, William W., 4,272,321, Cl. 176-87.000.
Evans, Frank C., to Zin-Plas Corporation. Showerhead with replaceable housing. 4,272,022, Cl. 239-107.000.
Evans, Mervyn; and Harris, John D., to National Research Development Corporation. Post-fracture stability of limbs. 4,271,832, Cl. 128-92.00A.
Evans, Robert M., to RCA Corporation. Method for tuning a filter circuit. 4,272,743, Cl. 333-176.000.
Ewald, Richard; and Freiberg, Klaus, to Braas & Co. GmbH. Self-adhesive tape. 4,272,573, Cl. 428-40.000.
Explosive Technology, Inc.: *See*—
Burkdoll, Frank B., 4,272,102, Cl. 280-731.000.
Exxon Production Research Company: *See*—
Gale, Walter W., 4,271,907, Cl. 166-274.000.
Noerager, Jere A.; Taft, Daniel G.; and Bednar, John M., 4,272,059, Cl. 254-392.000.
Peters, Beldon A., 4,271,704, Cl. 73-864.630.
Robinson, Leon H., Jr.; Barry, Adelbert; and Speers, Jerry M., 4,271,908, Cl. 166-315.000.
Exxon Research & Engineering Co.: *See*—
Johnson, Burnett H., 4,272,467, Cl. 264-41.000.
Mohan, Raam R.; and Singhal, Gopal H., 4,272,401, Cl. 252-413.000.
Silbernagel, Bernard G.; Mohan, Raam R.; and Singhal, Gopal H., 4,272,400, Cl. 252-413.000.
Faatz, Albert C., to Foster Wheeler Energy Corporation. Process for comminuting and activating limestone by reaction with CO_2. 4,272,498, Cl. 423-242.000.
Fabbrica d'Armi P. Beretta S.p.A.: *See*—
Beretta, Pier C., 4,271,623, Cl. 42-72.000.
Facet Enterprises, Inc.: *See*—
Miller, Donald L., 4,271,941, Cl. 192-35.000.
Fairbairn, LeRoy W., to Bendix Corporation, The. Electrical contact for an electrical connector. 4,272,150, Cl. 339-276.00T.
Fairgrieve, John S.: *See*—
Von Esch, Anne M.; Thomas, Alford M.; Fairgrieve, John S.; and Seely, John H., 4,272,528, Cl. 424-211.000.
Farge, Daniel: *See*—
Aloup, Jean-Claude; Bouchaudon, Jean; Farge, Daniel; and James, Claude, 4,272,534, Cl. 424-248.510.
Farrell, Daniel L. Solar energy apparatus. 4,271,819, Cl. 126-417.000.
Farrell, Eugene C., Jr. Pipe cleaning apparatus. 4,271,556, Cl. 15-104.30R.
Fastex s.r.l.: *See*—
Motta, Carmelo, 4,271,871, Cl. 139-384.00B.
Fate, William A.: *See*—
Hetrick, Robert E.; and Fate, William A., 4,272,329, Cl. 204-1.00T.
Faubel, Manfred; Holber, William M.; and Toennies, Jan P., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Electron impact ion source with field emission cathode. 4,272,699, Cl. 313-360.000.
Feast, Alan A. J., to International Synthetic Rubber Company Ltd., The. Preparation of latices. 4,272,426, Cl. 260-29.70H.
Feichtmayr, Franz: *See*—
Lach, Dietrich; Streicher, Rolf; and Feichtmayr, Franz, 4,272,243, Cl. 8-436.000.
Feinbloom, Richard E., to Designs for Vision, Inc. Method of splitting a parallel beam of light at first and second camera locations to provide par focal registration. 4,272,161, Cl. 350-320.000.
Feldman, Abe, to Timex Corporation. Gas driven gyroscope. 4,271,709, Cl. 74-5.120.
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N. Device for forming taps when winding electrical coils. 4,272,033, Cl. 242-7.05B.
Ferguson, Robert W. Folding tent. 4,271,856, Cl. 135-4.00A.
Ferodo Limited: *See*—
Hatch, Donald; Ellis, Christopher R.; Gibbon, Richard H.; and Stirling, Walter R., 4,271,937, Cl. 188-264.00F.
Ferrari, Giorgio: *See*—
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Ferrero, Franca B., to Brefer S.p.A. Excavator with articulated arms. 4,271,613, Cl. 37-103.000.
Fiatron Systems, Inc.: *See*—
Schick, Karl G., 4,272,483, Cl. 422-67.000.
Fichtel & Sachs AG: *See*—
Kolb, Dieter; and Muller, Karl, 4,271,950, Cl. 192-98.000.
Weidl, Johann; Heyer, Gunter; Wecker, Wilhelm; Weippert, Gerhard; and Spichala, Paul, 4,271,869, Cl. 138-30.000.
Figala, Volker, to Byk Gulden Lomberg Chemische Fabrik GmbH. Phenylaminothiophenacetic acids, their synthesis, compositions and use. 4,272,507, Cl. 424-275.000.
Filice, Dennis; and Bories, David G. Self-propelled rolling toy. 4,272,093, Cl. 280-206.000.
Filippi, Arthur M.: *See*—
Yoldas, Bulent E.; Filippi, Arthur M.; and Buckman, Raymond W., Jr., 4,272,588, Cl. 428-433.000.
Fill, Ernst E.; Jetter, Heinz L.; and Volk, Reinhard, to Uranit Uran-Isotopentrennungs-Gesellschaft mbH. Method and apparatus for isotope-selectively exciting gaseous or vaporous uranium hexafluoride molecules. 4,272,681, Cl. 250-423.00P.
Fiorani, Osvaldo: *See*—
Passalenti, Beppino; Giuliani, Gino; and Fiorani, Osvaldo, 4,272,416, Cl. 260-18.0EP.
Fischer, Jurgen: *See*—
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,272,683, Cl. 250-507.000.
Fishgal, Semyon I. Machine lubrication system. 4,271,929, Cl. 184-6.240.
Fitzgerald, William V., to RCA Corporation. Service switch apparatus. 4,272,777, Cl. 358-10.000.
Fiumani, Francesco, to Societa Italiana Telecomunicazion Siemens SpA. Receiver for data-transmission system operating with single-sideband amplitude modulation. 4,272,845, Cl. 375-20.000.
Flee, Stephen L.: *See*—
Carroll, James C.; Chapman, Donald L.; Flee, Stephen L.; and McGoldrick, Gilbert A., 4,272,643, Cl. 174-48.000.
Fler, Jack P., to Jacmorr Manufacturing Limited. Sliding drawer suspension. 4,272,139, Cl. 312-334.000.
Fleury, Daniel: *See*—
Joubert, Philippe; Durando, Pierre; and Fleury, Daniel, 4,271,550, Cl. 9-8.00R.
Flom, Merlyn G.: *See*—
Cella, John A.; Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; and Vargas, Ovidio, 4,272,544, Cl. 424-273.00R.
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., to United States of America, Navy. Master buoy system for acoustic array deployment, using underwater glide bodies remotely launched from a submerged pod. 4,272,835, Cl. 367-4.000.
Flowers, Joseph, Jr.: *See*—
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., 4,272,245, Cl. 23-230.00B.
Floyd, Roger M.: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,272,009, Cl. 229-41.00R.
Fluor Corporation: *See*—
Hammond, James D.; and Deng, EH, 4,272,269, Cl. 62-17.000.
Flynn, George J. Method and apparatus for diastolic pressure measurement. 4,271,843, Cl. 128-681.000.
FMC Corporation: *See*—
Dean, Arthur L.; and Wine, William L., 4,272,366, Cl. 209-364.000.
Keay, Robert E.; Orwoll, Edward F.; and Price, John A., 4,272,441, Cl. 260-346.730.
Milberger, Lionel J.; and Tucker, Albert R., 4,271,867, Cl. 137-625.210.
Templin, Harry W.; and Enders, Edward O., 4,271,663, Cl. 59-84.000.
Foerster, Siegfried: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,272,365, Cl. 209-223.00R.
Fogarty, Thomas J.; and Chin, Albert K., to Fogarty, Thomas J. Dilation catheter method and apparatus. 4,271,839, Cl. 128-344.000.
Fogle, Ozzie: *See*—
Cooley, James; and Fogle, Ozzie, 4,272,581, Cl. 428-328.000.
Fonseca, Oscar. Global aquarium with aerator and purifier. 4,272,372, Cl. 210-169.000.
Fonskov, Jorgen: *See*—
Bengtsson, Bengt L.; and Fonskov, Jorgen, 4,272,553, Cl. 426-241.000.
Foord, Brian A.; and Leutz, Donald C., to Parker-Hannifin Corporation. Fluid filter and indicator. 4,272,368, Cl. 210-90.000.
Force, Carlton G., to Westvaco Corporation. Treatment of styrene-butadiene rubber. 4,272,419, Cl. 260-27.0BB.
Ford Motor Company: *See*—
Berger, Alvin H., 4,272,459, Cl. 261-34.00A.
Hetrick, Robert E.; and Fate, William A., 4,272,329, Cl. 204-1.00T.
Hetrick, Robert E., 4,272,330, Cl. 204-1.00T.
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Holka, Thomas C.; and Marvin, Brian D., 4,272,105, Cl. 280-804.000.
LaDuke, Jack E., 4,272,145, Cl. 339-91.00R.
Fortunato, Louis F. Method and apparatus for masterkeying. 4,271,597, Cl. 33-174.00F.
Foster, Charles H.: *See*—
McCombs, Charles A.; and Foster, Charles H., 4,272,444, Cl. 260-397.300.
Foster, Leslie W., to Toro Company, The. Clutch and blade brake for lawn mower. 4,271,658, Cl. 56-11.300.
Foster Wheeler Energy Corporation: *See*—
Faatz, Albert C., 4,272,498, Cl. 423-242.000.
Foulon, Raymond: *See*—
Meyer, Nicolas; and Foulon, Raymond, 4,272,403, Cl. 252-428.000.

Fralick, Richard: *See—*
Wood, Charles; and Fralick, Richard, 4,271,542, Cl. 4-495.000.
Fram, Adolph: *See—*
Moses, John R.; and Fram, Adolph, 4,272,371, Cl. 210-168.000.
Fram-Israelson Enterprises: *See—*
Moses, John R.; and Fram, Adolph, 4,272,371, Cl. 210-168.000.
Frank, Robert G.; Canonaco, Rudy; and Posney, Richard V., to PPG Industries, Inc. Slotted glass sheet shaping mold. 4,272,274, Cl. 65-273.000.
Frank, Walter; Bendszus, Otto; Freier, Hans-Joachim; and Traenckner, Hans-Joachim, to Bayer Aktiengesellschaft. Aqueous polyester emulsions and the use thereof for the production of particularly thin-layer coatings. 4,272,420, Cl. 260-28.00R.
Franklin, Grover C., Jr. Apparatus for mixing gases with liquids. 4,272,461, Cl. 261-93.000.
Franklin Institute, The: *See—*
Erb, Robert A., 4,271,823, Cl. 126-445.000.
Franz, Norman C. Method and nozzle assembly for fluid jet penetration of a work material. 4,272,017, Cl. 239-1.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,272,664, Cl. 219-53.000.
Fratelli Borletti S.p.A.: *See—*
Broetto, Costantino, 4,272,755, Cl. 340-58.000.
Fratty, Hector, to Cibie Projecteurs. Motor vehicle head lamp lenses having light deflecting ribs. 4,272,801, Cl. 362-336.000.
Frederick Electronics: *See—*
McKeen, Robert S.; Keefer, Kenneth S.; and Sawyer, Theodore E., 4,272,141, Cl. 339-18.00R.
Freeman, Edward M. Economizer comfort index control. 4,271,898, Cl. 165-16.000.
Freiberg, Klaus: *See—*
Ewald, Richard; and Freiberg, Klaus, 4,272,573, Cl. 428-40.000.
Freier, Hans-Joachim: *See—*
Frank, Walter; Bendszus, Otto; Freier, Hans-Joachim; and Traenckner, Hans-Joachim, 4,272,420, Cl. 260-28.00R.
Fried. Krupp GmbH: *See—*
Homann, Thorsten, 4,271,754, Cl. 100-37.000.
Friedman, Harry G., to Medtronic, Inc. Electro-ocular stimulation system. 4,271,841, Cl. 128-419.00R.
Frier, James L.: *See—*
Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., 4,272,499, Cl. 423-242.000.
Frieser, Edwin; and Novotny, Jurgen, to ELBAK Batteriewerke Gesellschaft mbH. Magazine for platelike articles. 4,271,980, Cl. 221-297.000.
Frito-Lay, Inc.: *See—*
Schroeder, Otto E.; Wohlman, Alan; and Topor, Michael G., 4,272,554, Cl. 426-321.000.
Fritz, Adolf: *See—*
Bodig, Bernd; Schmied, Helmut; Hohne, Gerd; and Fritz, Adolf, 4,271,812, Cl. 123-609.000.
Fritz, James S.; Gjerde, Douglas T.; and Schmuckler, Gabriella, to United States of America, Energy. Method and apparatus for chromatographic quantitative analysis. 4,272,246, Cl. 23-230.00R.
Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; Christenson, Philip A.; and Mack, Robert, 4,272,412, Cl. 252-522.00R.
Frost, Jonathan R.: *See—*
Koletar, Gabor I.; Frost, Jonathan R.; Dupont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,272,539, Cl. 424-256.000.
Frye, John V., to Ag-Team, Inc. Disc harrow. 4,271,912, Cl. 172-441.000.
Fugate, Philip E.; and Roy, Kenneth L., to Ledex, Inc. Print wire solenoid. 4,272,748, Cl. 335-271.000.
Fuhrer, Jack S., to RCA Corporation. Defect compensation for color television. 4,272,785, Cl. 358-127.000.
Fuji Electric Co., Ltd.: *See—*
Kohno, Masaru; and Nakagawa, Yukio, 4,271,708, Cl. 73-861.280.
Matsuo, Osamu; Nakamura, Keijiro; and Kodaira, Toshimi, 4,271,967, Cl. 209-558.000.
Yasuhara, Takeshi; and Tago, Keiichiro, 4,272,822, Cl. 364-481.000.
Fuji Photo Film Co., Ltd.: *See—*
Kishimoto, Shinzo, 4,272,616, Cl. 430-529.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Fuseya, Yoshiharu, 4,272,606, Cl. 430-264.000.
Mifune, Hiroyuki; and Hirano, Shigeo, 4,272,614, Cl. 430-441.000.
Oda, Kazutaka; and Ohba, Hisao, 4,272,342, Cl. 204-129.400.
Shibaoka, Haruo; and Ogawa, Junkichi, 4,272,613, Cl. 430-364.000.
Yoneyama, Masakazu; Kishimoto, Shinzo; and Nakayama, Yasuhiro, 4,272,615, Cl. 430-527.000.
Fuji Photo Optical Co., Ltd.: *See—*
Ishibashi, Kuniaki; Shiraishi, Norio; and Oshiro, Susumu, 4,272,156, Cl. 350-96.260.
Fujikawa, Tetsuzo; and Nishimura, Michio, to Kawasaki Jukogyo Kabushiki Kaisha. Cylinder head gasket for a liquid cooled internal combustion engine. 4,272,085, Cl. 277-235.00B.
Fujimoto, Yoshiji: *See—*
Kakumoto, Shigeru; Fujimoto, Yoshiji; and Okada, Kunihiro, 4,272,756, Cl. 340-146.30H.
Fujinaka, Yoshiaki; Ohashi, Haruo; Miyazaki, Masahito; Mizuno, Kenzi; and Kuwabara, Fukuzi, to Iwaki Co., Ltd. Electromagnetically-operated fixed displacement pump. 4,272,225, Cl. 417-417.000.
Fujitsu Fanuc Limited: *See—*
Fukuyama, Hiroomi; and Isobe, Shinichi, 4,272.711, Cl. 318-565.000.
Fujitsu Limited: *See—*
Inui, Norio; Kume, Noriaki; and Okamoto, Tetsuro, 4,272,827, Cl. 364-764.000.
Katsumata, Yutaka; Sanagi, Mitsuru; and Tanaka, Hideo, 4,272,819, Cl. 364-200.000.
Shirai, Kazunari; Tanaka, Izumi; Tanaka, Shinpei; and Nishimoto, Keiji, 4,271,582, Cl. 29-571.000.
Fujiwara, Kiyoshi: *See—*
Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, 4,272,011, Cl. 233-15.000.
Fukahori, Hidehiko: *See—*
Iwashita, Tomonori; Fukahori, Hidehiko; and Mashimo, Yukio, 4,272,173, Cl. 354-173.000.
Fukano, Kazuaki; Nakagawa, Ryuichi; Fukasawa, Akira; and Nishio, Hiroshi, to Lion Fat & Oil Co., Ltd., The. Enzyme-containing detergent composition. 4,272,396, Cl. 252-174.120.
Fukasawa, Akira: *See—*
Fukano, Kazuaki; Nakagawa, Ryuichi; Fukasawa, Akira; and Nishio, Hiroshi, 4,272,396, Cl. 252-174.120.
Fukuchi, Ichiro: *See—*
Takemura, Nobuyuki; and Fukuchi, Ichiro, 4,271,983, Cl. 222-85.000.
Fukuda, Shuzo; Watanabe, Tsutomu; and Abe, Masahiro, to Nippon Kokan Kabushiki Kaisha. Method of fluidification of liquid between plane parallel plates by jetting the liquid. 4,272,334, Cl. 204-27.000.
Fukuda, Yoji; Fukushima, Fumio; Matsuoka, Tomizo; Nitta, Tsuneharu; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of preparing flake-like ceramic particle of zinc sulfide phosphor. 4,272,397, Cl. 252-301.60S.
Fukumitsu, Hirotaka: *See—*
Yoneda, Koji; Ohashi, Takehisa; Onishi, Masami; and Fukumitsu, Hirotaka, 4,272,517, Cl. 424-72.000.
Fukumori, Hiromasa: *See—*
Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, 4,272,011, Cl. 233-15.000.
Fukushima, Fumio: *See—*
Fukuda, Yoji; Fukushima, Fumio; Matsuoka, Tomizo; Nitta, Tsuneharu; and Hayakawa, Shigeru, 4,272,397, Cl. 252-301.60S.
Fukuyama, Hiroomi; and Isobe, Shinichi, to Fujitsu Fanuc Limited. Malfunction detecting system. 4,272,711, Cl. 318-565.000.
Funck, Herbert. Sole-unit for protective footwear. 4,271,607, Cl. 36-30.00R.
Furst, Andor: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,272,630, Cl. 560-6.000.
Furukawa, Tatsuya, to Ricoh Co., Ltd. Ink jet printer with multiple nozzle print head and interlacing or dither means. 4,272,771, Cl. 346-75.000.
Furutani, Toshinobu; Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalyst supported oxygen sensor with sensor element having catalyst and protective layers and a method of manufacturing same. 4,272,349, Cl. 204-195.00S.
Fuseya, Yoshiharu: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Fuseya, Yoshiharu, 4,272,606, Cl. 430-264.000.
Fuziwara, Shigeru; and Tamura, Shinichi, to Nippon Steel Corporation. Blast furnace hearth. 4,272,062, Cl. 266-284.000.
Gadbois, Richard T.; and Matthews, Richard A., to Minnesota Mining and Manufacturing Company. Rotatable floor treating pad. 4,271,640, Cl. 51-400.000.
Gadient, Fulvio; and Suess, Rudolf, to Sandoz Ltd. N-Phenylindoline derivatives, and pharmaceutical compositions containing them. 4,272,533, Cl. 424-248.400.
Gaeckle, Fred J., to General Electric Company. Thermal fuze mechanical disconnect eutectic containment. 4,271,947, Cl. 192-82.00T.
Gaffar, Abdul, to Colgate-Palmolive Company. Antigingivitis composition. 4,272,512, Cl. 424-49.000.
Gaffar, Abdul, to Colgate-Palmolive Company. Stabilized oral composition. 4,272,513, Cl. 424-52.000.
Gagnon, Pierre; and Laforest, Pierre. Brake. 4,271,934, Cl. 188-170.000.
Galbraith, Lyle D.; Stewart, Hudson; and Congdon, Jon M., to Rockcor, Inc. Tire cleaning system with tire spreader. 4,272,301, Cl. 134-8.000.
Gale, Walter W., to Exxon Production Research Company. Microemulsions which compatibly incorporate viscosifiers and their use in enhanced oil recovery. 4,271,907, Cl. 166-274.000.
Gallagher, Gerard A., to Contraves Goerz Corporation. Regenerative DC power supply. 4,272,807, Cl. 363-126.000.
Gallaro, Anthony V.; Lane, Joseph E.; and Williams, G. Norman, to GTE Products Corporation. Cathode ray tube arc limiting coating. 4,272,701, Cl. 313-479.000.
Gallay, S.A.: *See—*
Le Bret, Lucien, 4,271,778, Cl. 113-121.0AB.
Galli, Mario: *See—*
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,271,695, Cl. 73-23.100.
Galloway, Charles R.: *See—*
Galloway, Robert L.; and Galloway, Charles R., 4,271,865, Cl. 137-614.060.
Galloway, Robert L.; and Galloway, Charles R. Dry break coupling valve. 4,271,865, Cl. 137-614.060.

Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., to Bendix Corporation, The. One piece socket type electrical contacts. 4,272,149, Cl. 339-258.00R.

Gambell, James W.; and Auvil, Steven R., to Monsanto Company. Acetonitrile process with improved catalysts. 4,272,451, Cl. 260-465.100.

Gambro AB: *See*—
Stenberg, Kaj O.; and Traven, Lars J. C., 4,272,373, Cl. 210-175.000.

Gandhi, Om P.: *See*—
Turner, Paul F.; and Gandhi, Om P., 4,271,848, Cl. 128-804.000.

Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., to Schering Corporation. 6-(Substituted-hydroxymethylene penams). 4,272,439, Cl. 260-245.20R.

Ganis, G. Robert. Instrument and method for determining map coordinates. 4,271,596, Cl. 33-1.00C.

Gants, Wilbur L.: *See*—
Davert, Edward J.; and Gants, Wilbur L., 4,272,215, Cl. 408-14.000.

Garcia, Jose M., to Equipment Company of America. Drum lifter for fork lift truck. 4,272,220, Cl. 414-607.000.

Garcia, Octavio G.; and Lambert, Peter A., to Devine Lighting, Incorporated. Conversion unit for electrical light fixture. 4,271,621, Cl. 40-570.000.

Garcia, Vincent H.: *See*—
Birdsall, Ivan P.; Bradmon, Paul J.; Buddington, Donald L.; Garcia, Vincent H.; and Nelson, Don S., 4,272,187, Cl. 355-56.000.

Garrison, Stephen P.; and Kroeker, Elmer L. B., to International Business Machines Corporation. Roll-wave sheet separator structure. 4,272,068, Cl. 271-117.000.

Gatan, Inc.: *See*—
Swann, Peter R., 4,272,682, Cl. 250-442.000.

Gates, Geoffrey W.; and Kepley, Garry D., to Bell Telephone Laboratories, Incorporated. Arrangement for deleting trailing message portions. 4,272,810, Cl. 364-900.000.

Gatzen, Carl-Jacob; Poethen, Hartmut; and Sion, Heribert. Process for the lowering of increased levels of cholesterol and neutral fat in the blood of humans. 4,272,548, Cl. 424-312.000.

Gatzsch, Konstantin: *See*—
Veit, Ivar; Sickel, Liesbet; and Gatzsch, Konstantin, 4,272,647, Cl. 179-1.0AL.

Gebr. Happich GmbH: *See*—
Viertel, Lothar; and Nowak, Manfred, 4,272,118, Cl. 296-97.00R.

Gebruder Junghans GmbH: *See*—
Schultheiss, Udo, 4,272,842, Cl. 368-316.000.

Gehle, Warren D.: *See*—
Smith, Kendall O.; and Gehle, Warren D., 4,272,510, Cl. 427-47.000.

Geibel, Horst, to Elb-Werkzeug-und Maschinenbau GmbH. Surface grinding machine. 4,271,637, Cl. 51-92.00R.

Geiger, Robert W.: *See*—
Tschanz, August E.; and Geiger, Robert W., 4,271,700, Cl. 73-182.000.

Geil, Ronald J., to Gould Inc. Priming apparatus for liquid ink writing instruments. 4,272,772, Cl. 346-140.00R.

Geller, William L.; and Naugle, Richard L., to GTE Laboratories Incorporated. Exit-entry sensing apparatus. 4,272,762, Cl. 340-556.000.

General Dynamics, Pomona Division: *See*—
Bastian, Thomas W.; Lacy, Garry T.; and Vink, John J., 4,272,040, Cl. 244-3.220.

General Electric Company: *See*—
Cotic, Dennis J., 4,272,680, Cl. 250-375.000.
Crawford, John G., 4,271,861, Cl. 137-387.000.
Dudgeon, Charles D., 4,272,310, Cl. 156-172.000.
Gaeckle, Fred J., 4,271,947, Cl. 192-82.00T.
Howell, Edward K., 4,272,797, Cl. 361-93.000.
Lange, Kai, 4,272,678, Cl. 250-363.00S.
Lawrance, Richard J.; and Wood, Linda D., 4,272,353, Cl. 204-283.000.
Lou, Liang F., 4,272,754, Cl. 338-21.000.
Lupinski, John H.; and Gorowitz, Bernard, 4,271,783, Cl. 118-629.000.
Noland, Joseph R., 4,271,899, Cl. 165-29.000.
Razzano, John S., 4,272,624, Cl. 528-37.000.
Stroble, Reimann L.; Hueschen, Robert E.; and Jens, Richard A., 4,272,696, Cl. 313-60.000.

General, Inc., The: *See*—
Davis, Charles J., 4,272,222, Cl. 414-694.000.

General Motors Corporation: *See*—
Benton, Robert L., 4,272,476, Cl. 264-225.000.
Budinski, John A., 4,271,945, Cl. 192-58.00B.
Lancaster, David R., 4,271,810, Cl. 123-568.000.
McCarbery, Gary P., 4,271,797, Cl. 123-412.000.
McCartney, Charles P., Jr., 4,271,586, Cl. 29-623.500.

General Systems Research Ltd.: *See*—
Schmidt, Erick, 4,271,619, Cl. 40-154.000.

Genini, Graziano, to Albatex A.G. Pair of grippers for weaving looms without shuttle. 4,271,873, Cl. 139-446.000.

George, Louis J.; and Theobald, Barbara A., to Polaroid Corporation. Photographic product including a light-reflecting layer with carbon coated with reflecting material. 4,272,594, Cl. 430-14.000.

Georgetown University: *See*—
Ledley, Robert S., 4,271,706, Cl. 73-614.000.

Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., to Institute po Mechanika i Biomechanika. Telescopic sinking hydrant. 4,272,023, Cl. 239-204.000.

Geosource Inc.: *See*—
Mehrkam, Thomas O.; and Lockett, James F., 4,271,968, Cl. 209-564.000.

Gercekci, Anil; and Maeder, Heinz B., to Motorola, Inc. Start stop oscillator having fixed starting phase. 4,272,736, Cl. 331-108.00B.

Gergely, Gerhard. Gas generating cleaning article. 4,272,393, Cl. 252-91.000.

Gerlach, Klaus; and Wick, Gerhard, to Akzo N.V. Production of polyurethane embedding materials. 4,272,377, Cl. 210-321.300.

Gerlach, Ulrich H.: *See*—
Collins, Stuart A., Jr.; Sengupta, Uday K.; and Gerlach, Ulrich H., 4,272,157, Cl. 350-374.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Hauschopp, Alois, 4,272,130, Cl. 299-34.000.

Ghosh, Anil C.: *See*—
Razdan, Raj K.; and Ghosh, Anil C., 4,272,540, Cl. 424-260.000.

Gibbon, Richard H.: *See*—
Hatch, Donald; Ellis, Christopher R.; Gibbon, Richard H.; and Stirling, Walter R., 4,271,937, Cl. 188-264.00F.

Gibbs, Charles G., to Gulf Oil Corporation. Arylthioureidoisoindolines and use as plant growth regulators. 4,272,284, Cl. 71-96.000.

Gibson, John J., to RCA Corporation. Video disc playback apparatus with non-linear aperture correction. 4,272,786, Cl. 358-128.500.

Gidner, Robert R., to Zurn Industries, Inc. Flush valves. 4,272,052, Cl. 251-39.000.

Gievers, Christa L.: *See*—
Gievers, John G., 4,272,194, Cl. 356-350.000.

Gievers, John G., to Gievers, Christa L. Rotation sensitive ring laser system. 4,272,194, Cl. 356-350.000.

Gillis, John A.: *See*—
Lewinger, Nathan; and Gillis, John A., 4,272,824, Cl. 364-502.000.

Gin, Bobby: *See*—
Canning, Thomas N.; Barns, Christopher E.; Murphy, James P.; Gin, Bobby; and King, Robert W., 4,271,761, Cl. 102-504.000.

Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,271,904, Cl. 166-251.000.

Giraud, Georges, to Compagnie Internationale pour l'Informatique CII Honeywell Bull (Societe Anonyme). Arrangement for providing a power supply and transmitting electrical signs between two devices using a small number of contacts. 4,272,758, Cl. 340-310.00A.

Girijavallabhan, Viyyoor M.: *See*—
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,272,439, Cl. 260-245.20R.

Giuliani, Gino: *See*—
Passalenti, Beppino; Giuliani, Gino; and Fiorani, Osvaldo, 4,272,416, Cl. 260-18.0EP.

Givens, Edwin N.: *See*—
Greskovich, Eugene J.; and Givens, Edwin N., 4,272,501, Cl. 423-447.100.

Gjerde, Douglas T.: *See*—
Fritz, James S.; Gjerde, Douglas T.; and Schmuckler, Gabriella, 4,272,246, Cl. 23-230.00R.

GKN Axles Limited: *See*—
Millward, Thomas H.; Wylie, David G.; and Clarke, Philip C., 4,271,717, Cl. 74-467.000.

Glass, James P., Jr., to Monsanto Company. Finish application for tandem winding. 4,272,565, Cl. 427-177.000.

Glassman, E. Glenn. Orthodontic appliance for applying a power force to a tooth. 4,272,240, Cl. 433-18.000.

Glaum, Gerald V.: *See*—
Subramanian, Kohur N.; Hall, Rotrou A.; and Glaum, Gerald V., 4,272,493, Cl. 423-41.000.

Glaxo Group Limited: *See*—
Croci, Marco; and Maruzzelli, Gennaro, 4,272,438, Cl. 260-239.100.

Gleich, Bruno: *See*—
Grun, Reinhold; Troster, Dietrich; and Gleich, Bruno, 4,271,569, Cl. 26-79.000.

Glifberg, Nils B.: *See*—
Andersson, Alf H.; and Glifberg, Nils B., 4,271,662, Cl. 56-121.440.

Glock, Eugene, to American Brands, Inc. Method for increasing the filling capacity of tobacco. 4,271,852, Cl. 131-292.000.

Gloucester Engineering Co., Inc.: *See*—
Schott, Charles M., Jr., 4,272,231, Cl. 425-72.00R.

Gnesa, Edward C. Portable long barrel firearm stand for rifle or shotgun. 4,271,969, Cl. 211-64.000.

GNS Gesellschaft fur Nuklear-Service mbH: *See*—
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,272,683, Cl. 250-507.000.

Gold, Elijah H.: *See*—
Neustadt, Bernard R.; and Gold, Elijah H., 4,272,550, Cl. 424-324.000.

Goldbeck, Heinz, to Durkoppwerke GmbH. Assembly for forming piped-edge openings in a fabric workpiece. 4,271,768, Cl. 112-68.000.

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Goldberg, Paul R.: *See*—
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Goldman, Jerome N.: *See*—
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Goldman, Marvin A.; Goldman, Jerome N.; and DiMarchi, Silvio J., to Penn-Plax Plastics, Inc. Aquarium heater. 4,272,672, Cl. 219-523.000.
Golowacz, Edward. Electric fluid heating apparatus employing stackable heat transfer modules. 4,272,667, Cl. 219-326.000.
Gonzales, Frank, Jr.: *See*—
Eggerding, Carl L.; Gonzales, Frank, Jr.; and Niklewski, Jerzy B., 4,272,500, Cl. 423-327.000.
Goodwin, Burnus R. Propeller driven aerial toy. 4,271,629, Cl. 46-78.000.
Goodyear Tire & Rubber Company, The: *See*—
Lal, Joginder; and Walters, Sandra J., 4,272,436, Cl. 260-2.300.
Payne, Roger E.; Rossi, Robert K.; and Knizely, James B., 4,272,309, Cl. 156-117.000.
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Lupinski, John H.; and Gorowitz, Bernard, 4,271,783, Cl. 118-629.000.
Gosney, Garrison, to New England Machinery, Inc. Bottle orienting apparatus. 4,271,954, Cl. 198-399.000.
Gould Inc.: *See*—
Blumenthal, John, 4,271,559, Cl. 15-308.000.
Dethlefsen, Rolf, 4,272,661, Cl. 200-144.00B.
Geil, Ronald J., 4,272,772, Cl. 346-140.00R.
Halasz, Laszlo, 4,272,773, Cl. 346-140.00R.
Jacobs, Philip C., Jr., 4,272,752, Cl. 337-276.000.
Graf, Franz: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,272,365, Cl. 209-223.00R.
Grawe, John R.: *See*—
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Gray, Joseph E.: *See*—
Booth, David L.; and Gray, Joseph E., 4,272,453, Cl. 260-543.100.
Greatbatch, Robert J., to Weight Distribution Limited. Weight transfer hitch. 4,272,098, Cl. 280-494.000.
Green Line, Inc.: *See*—
Vavra, Gary J., 4,271,711, Cl. 74-96.000.
Green, Marvin V., administrator: *See*—
Kloefkorn, Melvin L.; Kloefkorn, Earl W., deceased; and Green, Marvin V., administrator, 4,271,660, Cl. 56-14.600.
Green, Robert E. Method and apparatus for cooking. 4,272,663, Cl. 219-10.55E.
Greiner, Leonard. Chemical heat pump. 4,272,268, Cl. 62-2.000.
Grenell, David, to Allen-Stevens Corp. Combination drill and tap tool. 4,271,554, Cl. 10-152.00T.
Greskovich, Eugene J.; and Givens, Edwin N., to International Coal Refining Company. Carbon fibers from SRC pitch. 4,272,501, Cl. 423-447.100.
Grewe, Josef; and Portner, Philip, to C. M. Offray & Son, Inc. Flexible reflex-reflective article having undulant surface and method of making the same. 4,272,564, Cl. 427-163.000.
Griffin, Gary A.: *See*—
Moro, Daniel G.; Griffin, Gary A.; and D'Andrea, Mark J., 4,272,518, Cl. 424-81.000.
Grolms, Friedbert, to Jagenberg Werke Aktiengesellschaft. Air nozzle for a jet dryer. 4,271,602, Cl. 34-160.000.
Grosser, Richard W.; and Long, Virgil L., Sr., to AMF Incorporated. Aluminum balance beam. 4,272,073, Cl. 272-111.000.
Grossutti, Aldo. Mattress and boxspring extender. 4,271,547, Cl. 5-181.000.
Grubb, Jesse T.: *See*—
Miller, William H.; and Grubb, Jesse T., 4,271,970, Cl. 212-146.000.
Grubka, Lawrence J., to Owens-Corning Fiberglas Corporation. Method and apparatus for production of mineral fibers. 4,272,272, Cl. 65-1.000.
Grumman Flexible Corporation: *See*—
Houser, Raymond E., 4,272,015, Cl. 236-49.000.
Grun, Reinhold; Troster, Dietrich; and Gleich, Bruno, to Bruckner-Trockentechnik KG. Tenter apparatus for fabric web tenter machines. 4,271,569, Cl. 26-79.000.
Grunder, Werner, to Zellweger Uster, Ltd. Method and apparatus for regulating out variations in the sliver weight on devices for processing fibre slivers. 4,271,565, Cl. 19-240.000.
GTE Automatic Electric Laboratories Inc.: *See*—
Beeman, Robert H., 4,272,721, Cl. 324-73.00R.
Lychyk, George S.; and Neese, Wayne E., 4,272,140, Cl. 339-17.0CF.
GTE Laboratories Incorporated: *See*—
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Klinedinst, Keith A., 4,272,593, Cl. 429-101.000.
GTE Products Corporation: *See*—
Collins, Floyd K., 4,272,700, Cl. 313-458.000.
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Guardian Electric Manufacturing Company: *See*—
Wright, William W.; and Vojir, Frank S., 4,272,746, Cl. 335-128.000.
Gudorf, James L., to Mead Corporation, The. Method of manufacturing charge plates. 4,271,589, Cl. 29-878.000.
Guedj, Richard: *See*—
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,272,676, Cl. 250-221.000.
Guerton, Jean P.; and Regazzoni, Francis, to S.K.F. Compagnie d'Applications Mechaniades. Clutch thrust bearing device. 4,271,949, Cl. 192-98.000.
Guillaume, Emile A. H., to Zelacolor Systems Establishment. Apparatus for making photographic pictures. 4,272,172, Cl. 354-161.000.
Gulf Oil Corporation: *See*—
Gibbs, Charles G., 4,272,284, Cl. 71-96.000.
Hedrich, Loren W., 4,272,280, Cl. 71-88.000.
Kirkpatrick, Joel L.; and Patel, Natu R., 4,272,279, Cl. 71-88.000.
Gulf Research & Development Company: *See*—
Beach, David L.; and Kobylinski, Thaddeus P., 4,272,406, Cl. 252-430.000.
Beach, David L.; and Kobylinski, Thaddeus P., 4,272,407, Cl. 252-430.000.
Schulz, Johann G. D.; and Cobler, John A., 4,272,253, Cl. 44-51.000.
Gunning, David W., to Anchor Coupling Co., Inc. Apparatus for applying coupling to hose. 4,271,576, Cl. 29-237.000.
Gunson's Sortex Limited: *See*—
Crowley, Kenneth H., 4,271,966, Cl. 209-576.000.
Gutierrez, Eddie N., to Lever Brothers Company. Certain tricarboxylic acid derivatives. 4,272,442, Cl. 260-346.740.
Guy F. Atkinson Company: *See*—
Martinson, Arthur R.; and Rogers, Victor D., 4,272,084, Cl. 277-30.000.
Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. Benzoyl indane carboxamides as antiphlogistics. 4,272,547, Cl. 424-311.000.
Hade, Horace A. Mixing container. 4,272,199, Cl. 366-130.000.
Hagedorn, Fritz, to Kali-Chemie Aktiengesellschaft. Apparatus for preparation of solutions of solid samples for wet chemical analysis. 4,272,477, Cl. 422-50.000.
Hahn, Klaus; Naarmann, Herbert; Penzien, Klaus; and Weber, Heinz, to BASF Aktiengesellschaft. Flameproofed expandable styrene polymers. 4,272,583, Cl. 428-407.000.
Hair, Michael L.: *See*—
Harbour, John R.; and Hair, Michael L., 4,272,596, Cl. 430-37.000.
Hakusan Seisakusho Co., Ltd.: *See*—
Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Nakamura, Mitsuo; and Amano, Takayoshi, 4,272,003, Cl. 228-13.000.
Halaby, Samuel A., Jr. Fluid sprayer apparatus and method. 4,272,019, Cl. 239-8.000.
Halasz, Laszlo, to Gould Inc. Ink supply and filter for ink jet printing systems. 4,272,773, Cl. 346-140.00R.
Halfpenny, Paul F.; Passarelli, Camillo L.; and Starrett, Philip S., to Lockheed Corporation. Humidification system. 4,272,014, Cl. 236-44.00B.
Hall, Robert D.: *See*—
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Hall, Rotrou A.: *See*—
Subramanian, Kohur N.; Hall, Rotrou A.; and Glaum, Gerald V., 4,272,493, Cl. 423-41.000.
Hamblin, Ronald F.; and Westgate, Harry H., to SKF (UK) Limited. Seal for a rolling bearing. 4,272,135, Cl. 308-20.000.
Hamilton, W. Duane, to American Optical Corporation. Lens generating apparatus. 4,271,636, Cl. 51-33.00W.
Hammack, Richard W.: *See*—
Stiller, Alfred H.; Sears, John T.; and Hammack, Richard W., 4,272,356, Cl. 208-8.0LE.
Hammer, Victor S., Jr.; Danko, Arthur J.; and Heard, Perry J., to Illinois Tool Works Inc. Safety latch device. 4,272,111, Cl. 292-17.000.
Hammermeister, David W.: *See*—
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Hammond, James D.; and Deng, EH, to Fluor Corporation. Cryogenic expander recovery process. 4,272,269, Cl. 62-17.000.
Hammond, Larry R. Animal commode. 4,271,544, Cl. 4-661.000.
Hanada, Toshihide: *See*—
Mizumoto, Katsuji; Hanada, Toshihide; Kominami, Yasuo; and Yamamura, Masahiro, 4,272,709, Cl. 318-317.000.
Hanak, Joseph J., to RCA Corporation. Tandem junction amorphous silicon solar cells. 4,272,641, Cl. 136-249.000.
Hancock, Terence M., to American Air Filter Company, Inc. Filter arrangement. 4,272,263, Cl. 55-377.000.
Handy, Roland J., to Xerox Corporation. 16 Bit analog to digital converter. 4,272,759, Cl. 340-347.0AD.
Hanes Corporation: *See*—
King, James F.; and Horton, Gilbert L., 4,271,580, Cl. 29-447.000.
Hanna, Mohsen R.: *See*—
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Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicidal agents based on acetanilides and dichloroacetamides. 4,272,282, Cl. 71-92.000.
Hanson, Douglas R. Single revolution torque limiting clutch. 4,271,944, Cl. 192-56.00L.
Harbour, John R.; and Hair, Michael L., to Xerox Corporation. Electrophoretic display device. 4,272,596, Cl. 430-37.000.
Hard af Segerstad, Goran J. F. Arrangement for attaching, folding and slidable suspension of curtains, draperies and the like at a curtain rod. 4,271,560, Cl. 16-93.00D.

Hardt, Dietrich: *See—*
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, 4,272,428, Cl. 260-31.20R.

Harigae, Shunji: *See—*
Yoshida, Tomio; Nakata, Yoshinobu; Harigae, Shunji; and Sato, Toshio, 4,272,651, Cl. 369-112.000.

Harman, John N., III, to Beckman Instruments, Inc. Interference reactor to provide selective SO_2 measurement by fluorescent methodology. 4,272,486, Cl. 422-91.000.

Harr, Forrest. Self-contained roof-mounted vehicle air-conditioning system. 4,271,677, Cl. 62-127.000.

Harrel, Incorporated: *See—*
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Harris Corporation: *See—*
Nicolay, Hugh C., 4,272,753, Cl. 337-297.000.
Riley, William J., Jr., 4,272,729, Cl. 331-1.00A.
Taylor, David L., 4,272,833, Cl. 365-210.000.
Wood, Grady M., 4,272,562, Cl. 427-87.000.

Harris, Holton E., to Harrel, Incorporated. System and method of temperature control for plastics extruder. 4,272,466, Cl. 264-40.600.

Harris, John D.: *See—*
Evans, Mervyn; and Harris, John D., 4,271,832, Cl. 128-92.00A.

Hartwig, William F., to Sperry Corporation. Digital graphics generation system. 4,272,808, Cl. 364-718.000.

Harvey Hubbell Incorporated: *See—*
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Harwood, Leopold A.; and Shanley, Robert L., II, to RCA Corporation. Color-difference signal processing circuits. 4,272,778, Cl. 358-23.000.

Harz, Martin: *See—*
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Hashimoto, Akihiko; Koiwai, Tamotsu; Kondo, Isao; and Kimura, Toyohiko, to Olympus Optical Co., Ltd. Single-lens reflex camera. 4,272,171, Cl. 354-152.000.

Hashimoto, Mitsuru: *See—*
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Hastings, Dawson W.: *See—*
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Hastwell, Peter J. Solar heater roof-panel construction. 4,271,818, Cl. 126-417.000.

Hata, Hiromi: *See—*
Yajima, Tadamasa; Kitagawa, Shuzo; and Hata, Hiromi, 4,272,287, Cl. 75-60.000.

Hata, Yoshitaka: *See—*
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Hatch, Donald; Ellis, Christopher R.; Gibbon, Richard H.; and Stirling, Walter R., to Ferodo Limited. Valves for hydraulic brakes. 4,271,937, Cl. 188-264.00F.

Hatton, Robert E.: *See—*
Brown, George S.; and Hatton, Robert E., 4,271,927, Cl. 182-36.000.

Haugland, Samuel R., to Delta Dynamics Corporation. Valve and fastener therefor. 4,272,057, Cl. 251-315.000.

Hauschopp, Alois, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation. 4,272,130, Cl. 299-34.000.

Hawaiian Motor Company: *See—*
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Hayakawa, Shigeru: *See—*
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Hayashi, Nobuyuki: *See—*
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Heard, Perry J.: *See—*
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Heckele, Helmut, to Richard Wolf GmbH. Endoscope with distance measuring device. 4,271,829, Cl. 128-6.000.

Hedrich, Loren W., to Gulf Oil Corporation. Isobenzofurandione thiosemicarbazones and use as plant growth regulators. 4,272,280, Cl. 71-88.000.

Hehl, Walter H., to International Business Machines Corporation. Horn loaded piezoelectric matrix printer drive method and apparatus. 4,272,200, Cl. 400-124.000.

Heijnemans, Werner A. L.: *See—*
Nieuwendijk, Joris A. M.; Vink, Nicolaas G.; and Heijnemans, Werner A. L., 4,272,727, Cl. 335-213.000.

Heim, Edward L., to Coin Acceptors, Inc. Serration detector. 4,271,952, Cl. 194-97.00R.

Heinzle, August. Punched card control system for embroidery machine. 4,271,770, Cl. 112-84.000.

Helfer, Jeffrey L.: *See—*
Jessop, Thomas C.; and Helfer, Jeffrey L., 4,272,482, Cl. 422-65.000.

Hellberg, Bengt. Disintegrator of wooden products. 4,272,032, Cl. 241-263.000.

Hemmer, Valentine J.: *See—*
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Henkel Kommanditgesellschaft auf Aktien: *See—*
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, 4,272,242, Cl. 8-94.150.

Henryk, Romanczyk: *See—*
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Herchenroeder, Robert B. H.; and Klein, H. Joseph, to Cabot Corporation. Oxidation resistant iron base alloy articles for welding. 4,272,289, Cl. 75-122.000.

Hercules Incorporated: *See—*
Breslow, David S.; and Simpson, David A., 4,272,610, Cl. 430-302.000.

Herculite Products, Inc.: *See—*
Kydonieus, Agis F.; and Kitterman, Roger L., 4,272,520, Cl. 424-84.000.

Herd, David P., to McEvoy Oilfield Equipment Company. Single double backseat. 4,272,055, Cl. 251-214.000.

Herr, Myron R.; and Elmore, Austin E., to Miller, Oliver A., a part interest. Self contained head mountable sleep inhibiting device. 4,272,764, Cl. 340-575.000.

Herrold, Anne M.; and Vargas, Ovidio, to Eli Lilly and Company. Cosmetic lotion formulation. 4,272,519, Cl. 424-83.000.

Herrold, Anne M.: *See—*
Cella, John A.; Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; and Vargas, Ovidio, 4,272,544, Cl. 424-273.00R.

Hertzog, Richard R.; and Zudkevitch, David, to Allied Chemical Corporation. Enhanced distillation of cyclohexanol from phenol with additional cyclohexanone feed. 4,272,326, Cl. 203-62.000.

Hester Industries, Inc.: *See—*
Williams, Charles E., 4,271,683, Cl. 62-374.000.

Hetrick, Robert E.; and Fate, William A., to Ford Motor Company. Steady state mode oxygen sensor and method. 4,272,329, Cl. 204-1.00T.

Hetrick, Robert E., to Ford Motor Company. Transient mode oxygen sensor and method. 4,272,330, Cl. 204-1.00T.

Hetrick, Robert E., to Ford Motor Company. Oscillatory mode oxygen sensor and method. 4,272,331, Cl. 204-1.00T.

Hewlett-Packard Company: *See—*
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Knack, Albert C., Jr., 4,272,148, Cl. 339-143.00R.

Heyer, Gunter: *See—*
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Hi-Flier Manufacturing Company, The: *See—*
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Hickson, Richard W., to Southern Refractories, Inc. Apparatus and method for spraying refractory material. 4,272,018, Cl. 239-8.000.

Hiereth, Hermann: *See—*
Withalm, Gert; and Hiereth, Hermann, 4,271,672, Cl. 60-602.000.

Higgins, Robert D., to Petrochem Consultants, Inc. Cryogenic recovery of liquid hydrocarbons from hydrogen-rich. 4,272,270, Cl. 62-24.000.

Hill, James C.: *See—*
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,399, Cl. 252-373.000.
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,555, Cl. 423-415.00A.

Hill, William M., Jr. Vehicle towing apparatus. 4,272,219, Cl. 414-563.000.

Hilliard, Garland E.: *See—*
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Hirano, Norimasa; and Yamauchi, Yuzuru, to Dainippon Ink & Chemicals Inc. Textile printing paste. 4,272,423, Cl. 260-29.6TA.

Hirano, Shigeo: *See—*
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Hirano, Tomoyuki; Yamanaka, Akira; and Tonai, Koichi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Impact absorbing device. 4,272,114, Cl. 293-133.000.

Hiroshi Takeuchi: *See—*
Seki, Kunimichi, 4,271,682, Cl. 62-354.000.

Hisatomi, Shigenobu: *See—*
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Hitachi Chemical Company, Ltd.: *See—*
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Hitachi, Ltd.: *See—*
Ito, Tsuneo, 4,272,832, Cl. 365-189.000.
Kadowaki, Yoshihiko, 4,272,809, Cl. 364-900.000.
Kadowaki, Yoshihiko; Okuda, Hiroya; and Morikawa, Takashi, 4,272,815, Cl. 364-200.000.
Kakumoto, Shigeru; Fujimoto, Yoshiji; and Okada, Kunihiro, 4,272,756, Cl. 340-146.30H.
Kimura, Tomoaki; and Nishino, Tadashi, 4,271,894, Cl. 164-87.000.
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Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, 4,272,011, Cl. 233-15.000.
Noguchi, Yoshio; and Ito, Tsuneo, 4,272,834, Cl. 365-230.000.

Hitt, George F., to Kreutzelman, Geurt. Driving interface for veneer chuck assembly. 4,271,881, Cl. 144-209.00R.
Ho, Benny K-C: *See*—
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Hoechst Aktiengesellschaft: *See*—
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Hoffman, Paul L.: *See*—
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Hoffstadt, Frederick A.: *See*—
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Hofman, Keith; Scott, Brian A.; and Vogl, Rudolf, to Lever Brothers Company. Hair conditioning shampoo. 4,272,515, Cl. 424-70.000.
Hohne, Gerd: *See*—
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Hokkaido University, President of: *See*—
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Holber, William M.: *See*—
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Holka, Thomas C.; and Marvin, Brian D., to Ford Motor Company. Passive seat belt system. 4,272,105, Cl. 280-804.000.
Holl, Alfred; and Wewerka, Anton, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Wrenching device for installing and tightening screws to a high torque. 4,271,730, Cl. 81-57.400.
Holland, Orvis L.: *See*—
Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., 4,272,499, Cl. 423-242.000.
Holley, Danforth. Solar heat structure. 4,271,820, Cl. 126-417.000.
Hollingsworth, Thomas C. Electronic hang glider hook-up warning system. 4,272,039, Cl. 244-1.00R.
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Holweg, Rainer: *See*—
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Holzwarth, Dietmar H.; and Rieger, Hansjorg W. Tire chain. 4,271,887, Cl. 152-220.000.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Compositions including mercaptoorganopolysiloxanes and metal salts of carboxylic acids. 4,272,415, Cl. 260-18.00S.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Mercaptoorganopolysiloxane elastomers catalyzed by metallic compounds in the presence of peroxides. 4,272,623, Cl. 528-15.000.
Homann, Thorsten, to Fried. Krupp GmbH. Method of and apparatus for pressing of liquids from solid materials. 4,271,754, Cl. 100-37.000.
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Hori, Kenji; and Kiyota, Yuhiko, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Secondary intake gas control system for internal combustion engine. 4,271,802, Cl. 123-432.000.
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Schaaf, Kurt H.; and Horn, Herman, 4,272,631, Cl. 562-559.000.
Horniak, Stephen. Ticket dispenser. 4,272,001, Cl. 226-187.000.
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King, James F.; and Horton, Gilbert L., 4,271,580, Cl. 29-447.000.
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Slater, Saul I., 4,272,042, Cl. 244-115.000.
Howell, Dan M.; Kolpek, Robert A.; and Schuller, William M., to International Business Machines Corporation. Communicating typewriter and dictation system utilizing analog recording and transmission techniques. 4,272,813, Cl. 364-900.000.
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Cole, James C.; and Cronenwett, George F., 4,271,895, Cl. 164-109.000.
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Huang, Yun-Yang, to Ethyl Corporation. Catalyst for preparation of oxygenates from carbon monoxide and hydrogen. 4,272,410, Cl. 252-465.000.
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Buckley, Franklin J.; and Hubbard, David W., 4,271,786, Cl. 118-661.000.
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Cullen, John S.; and Huber, Paul W., 4,272,264, Cl. 55-387.000.
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Huggins, James A. Apparatus for metering fluids. 4,272,051, Cl. 251-6.000.
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Ellion, M. Edmond; Putt, J. Ward; and Montich, John J., 4,272,257, Cl. 55-38.000.
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Matikainen, Martti, 4,271,574, Cl. 29-115.000.
Hurley, John F.; and Hoffman, Paul L., to Avco Corporation. Integral infrared radiation suppressor for a turbofan engine. 4,271,666, Cl. 60-226.00R.
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Rees, Herbert; and Schad, Robert D., 4,272,236, Cl. 425-564.000.
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Visser, Ronald C.; Estep, G. James; and Esbitt, Alan S., 4,272,644, Cl. 174-52.0FP.
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Earnest, Ernest R., 4,271,664, Cl. 60-39.18R.
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Takematsu, Tetsuo; Konnai, Makoto; and Ikeda, Kaoru, 4,272,283, Cl. 71-94.000.
Illinois Tool Works Inc.: *See*—
Hammer, Victor S., Jr.; Danko, Arthur J.; and Heard, Perry J., 4,272,111, Cl. 292-17.000.
Imada, Kiyoshi: *See*—
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Imhof, Rene; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Phenylquinolizinones. 4,272,627, Cl. 546-138.000.

Impac Inc.: *See*—
Decker, Charles R., III, 4,271,824, Cl. 126-449.000.
Imperial Chemical Industries Limited: *See*—
Jackson, Peter W.; Anderson, David K. C.; and Cleland, David B., 4,272,005, Cl. 228-107.000.
McIntyre, James E.; and Milburn, Alexander H., 4,272,625, Cl. 528-183.000.
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Roberts, George C., 4,271,539, Cl. 4-300.000.
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Carlson, Elmer V., 4,272,654, Cl. 179-119.00A.
Ing. C. Olivetti & C., S.p.A.: *See*—
Collin, Vittorino, 4,272,666, Cl. 219-216.000.
Inoue, Shunzo: *See*—
Arai, Toshio; Nagasawa, Takeshi; Iwaya, Toshio; Inoue, Shunzo; and Konishi, Motofumi, 4,272,185, Cl. 355-28.000.
Inoue, Tokuta: *See*—
Watanabe, Noboru; Inoue, Tokuta; and Oishi, Kiyohiko, 4,272,460, Cl. 261-53.000.
Institut Francais du Petrole: *See*—
Joubert, Philippe; Durando, Pierre; and Fleury, Daniel, 4,271,550, Cl. 9-8.00R.
Layotte, Pierre-Claude; and James, Andre, 4,271,923, Cl. 181-114.000.
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Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,272,023, Cl. 239-204.000.
Integrated Insulation Systems, Inc.: *See*—
Smith, Stuart B., 4,272,469, Cl. 264-53.000.
Intel Magnetics, Inc.: *See*—
Rose, Donald K., 4,272,817, Cl. 365-12.000.
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Snoek, Govert J., 4,271,862, Cl. 137-511.000.
Interlake, Inc.: *See*—
Burgener, Robert C.; and Martin, Philip T., 4,272,707, Cl. 318-139.000.
International Automated Machinery, Inc.: *See*—
Chung, Yun H., 4,271,739, Cl. 83-175.000.
International Business Machines Corporation: *See*—
Bate, Geoffrey; and Dunn, Larry P., 4,271,782, Cl. 118-623.000.
Birdsall, Ivan P.; Bradmon, Paul J.; Buddington, Donald L.; Garcia, Vincent H.; and Nelson, Don S., 4,272,187, Cl. 355-56.000.
Bisczat, John J.; and Bleau, Charles D., 4,272,205, Cl. 400-575.000.
Cammarano, Armando S.; DiGiacomo, Giulio; and Drofitz, Stephen S., Jr., 4,272,722, Cl. 324-76.00R.
Cox, Daniel E.; Kane, Susan M.; and Powers, John V., 4,272,348, Cl. 204-192.00E.
Eggerding, Carl L.; Gonzales, Frank, Jr.; and Niklewski, Jerzy B., 4,272,500, Cl. 423-327.000.
Garrison, Stephen P.; and Kroeker, Elmer L. B., 4,272,068, Cl. 271-117.000.
Hehl, Walter H., 4,272,200, Cl. 400-124.000.
Howell, Dan M.; Kolpek, Robert A.; and Schuller, William M., 4,272,813, Cl. 364-900.000.
Kennedy, Thomas N., 4,272,355, Cl. 204-298.000.
Moradzadeh, Yaqub, 4,272,599, Cl. 430-100.000.
Quinn, Paul A., Jr.; and Wipke, Walter J., 4,272,204, Cl. 400-342.000.
Rothman, Laura B.; Totta, Paul A.; and White, James F., 4,272,561, Cl. 427-84.000.
Steger, Donald J., 4,272,201, Cl. 400-208.000.
Treseder, Robert C., 4,272,181, Cl. 355-14.0SH.
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Greskovich, Eugene J.; and Givens, Edwin N., 4,272,501, Cl. 423-447.100.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,271,853, Cl. 131-276.000.
International Mobile Machines Incorporated: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,272,650, Cl. 179-77.000.
International Nickel Co., Inc., The: *See*—
Clark, Ian S. R.; and Pargeter, John K., 4,272,463, Cl. 264-12.000.
Subramanian, Kohur N.; Hall, Rotrou A.; and Glaum, Gerald V., 4,272,493, Cl. 423-41.000.
International Paper Company: *See*—
Capo, James L., 4,272,010, Cl. 229-43.000.
Wozniacki, Roger M., 4,272,008, Cl. 229-15.000.
International Synthetic Rubber Company Ltd., The: *See*—
Feast, Alan A. J., 4,272,426, Cl. 260-29.70H.
International Telephone and Telegraph Corporation: *See*—
Agrawal, Bhagwati P.; and Shenoi, Kishan, 4,272,648, Cl. 179-1.0VL.
MacKenzie, George W.; Shackelton, Clifford W.; and Yankielun, Norbert E., 4,272,655, Cl. 179-159.000.
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Pelat, Roger P.; and Le Pierres, Gildas, 4,271,935, Cl. 188-185.000.
Inui, Norio; Kume, Noriaki; and Okamoto, Tetsuro, to Fujitsu Limited. Division processing method system having 2N-bit precision. 4,272,827, Cl. 364-764.000.
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Mori, Fumio; and Ishibashi, Kazuhisa, 4,272,313, Cl. 156-262.000.
Ishibashi, Kuniaki; Shiraishi, Norio; and Oshiro, Susumu, to Fuji Photo Optical Co., Ltd. Illumination optical system using optical fiber bundles. 4,272,156, Cl. 350-96.260.
Ishida, Kunio: *See*—
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Ishimaru, Toshiaki: *See*—
Tsukada, Katsushige; Hayashi, Nobuyuki; Yamada, Hideo; Ishimaru, Toshiaki; and Kakumaru, Hajime, 4,272,607, Cl. 430-288.000.
Ishimoto, Osamu; Tsuda, Hiroshi; and Miyashita, Kiyoshi, to Olympus Optical Co., Ltd. Apparatus for discharging a fatigued developing agent in a magnetic brush developing device. 4,271,784, Cl. 118-652.000.
Isobe, Shinichi: *See*—
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Itek Corporation: *See*—
Digiovanni, Joseph J., 4,272,730, Cl. 331-16.000.
Ito, Hiroshi: *See*—
Yamazaki, Hitoshi; Ito, Hiroshi; Takeda, Toshiyuki; and Enomoto, Junzo, 4,272,421, Cl. 260-29.2EP.
Ito, Toshimitsu: *See*—
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.
Ito, Tsuneo, to Hitachi, Ltd. Semiconductor memory device. 4,272,832, Cl. 365-189.000.
Ito, Tsuneo: *See*—
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ITT Industries, Inc.: *See*—
Carle, Hermann; Klement, Heribert; and Knobloch, Uwe, 4,272,708, Cl. 318-266.000.
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Ivanov, Ilye H.: *See*—
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Ivanov, Nikolai A.: *See*—
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Velikov, Dancho N.; Kanchev, Kancho T.; Ivanov, Stanislav A.; Ivanov, Ilye H.; and Tepavicharov, Hristo D., 4,272,198, Cl. 366-65.000.
Ivorra, Claude A. M.: *See*—
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Iwai, Fumio: *See*—
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Iwaki Co., Ltd.: *See*—
Fujinaka, Yoshiaki; Ohashi, Haruo; Miyazaki, Masahito; Mizuno, Kenzi; and Kuwabara, Fukuzi, 4,272,225, Cl. 417-417.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Hydraulic control system for a hydrokinetic torque converter. 4,271,939, Cl. 192-3.300.
Iwanaga, Kazuyoshi: *See*—
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,271,721, Cl. 74-695.000.
Iwashita, Tomonori; Fukahori, Hidehiko; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Motor drive unit for camera having variable winding speed characteristics. 4,272,173, Cl. 354-173.000.
Iwata, Minoru: *See*—
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J. M. Huber Corporation: *See*—
Wason, Satish K., 4,272,509, Cl. 424-49.000.
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Biller, Bruce A.; and Jackson, Hiram S., Jr., 4,272,751, Cl. 337-231.000.
Jackson, Peter W.; Anderson, David K. C.; and Cleland, David B., to Imperial Chemical Industries Limited. Explosive cladding. 4,272,005, Cl. 228-107.000.
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Fler, Jack P., 4,272,139, Cl. 312-334.000.
Jacob, Charles W., to United States Steel Corporation. Adjustable-stroke crank apparatus. 4,271,720, Cl. 74-600.000.
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Sickler, Kenneth H.; McCarthy, Donald J.; and Quenneville, Raymond N., 4,271,796, Cl. 123-321.000.
Jacobs, Philip C., Jr., to Gould Inc. Electric fuse including two different fillers. 4,272,752, Cl. 337-276.000.

Jacobs, Stephen D., to University of Rochester, The. System for converting the frequency of coherent radiation. 4,272,694, Cl. 307-427.000.

Jacoby, Charles H. Method of creating a safe environment in salt mining. 4,272,128, Cl. 299-12.000.

Jaffe, Howard, to United States of America, Agriculture. Microencapsulation process. 4,272,398, Cl. 252-316.000.

Jagenberg Werke Aktiengesellschaft: *See*—
Grolms, Friedbert, 4,271,602, Cl. 34-160.000.

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Layotte, Pierre-Claude; and James, Andre, 4,271,923, Cl. 181-114.000.

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Janome Sewing Machine Co., Ltd.: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,271,773, Cl. 112-158.00E.

Janoski, Edward J.: *See*—
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Jansen, Herman: *See*—
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, 4,272,242, Cl. 8-94.150.

Japan Atomic Energy Research Institute: *See*—
Kaetsu, Isao; Kumakura, Minoru; and Yoshida, Masaru, 4,272,617, Cl. 435-182.000.

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Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Nakamura, Mitsuo; and Amano, Takayoshi, 4,272,003, Cl. 228-13.000.

Jardin, Hans: *See*—
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Jarrett, Steven M.; and Du Bose, Harold D., to Spectra-Physics, Inc. Dual reference interferometer for dye laser stabilization. 4,272,734, Cl. 331-94.50S.

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Jaunarajs, Karlis L., to Johns-Manville Corporation. Alkali resistant glass article and method of preparation. 4,272,294, Cl. 106-99.000.

Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, to Biuro Studiow, projetwo i Realizacji in Westycji Przemyslu Nieorganicznego "Biprokawas". Sprinkling device for absorption towers. 4,272,026, Cl. 239-273.000.

Jenness, Peter, III: *See*—
Maxwell, William E.; Jenness, Peter, III; and Potter, Michael F., 4,271,757, Cl. 101-37.000.

Jens, Richard A.: *See*—
Stroble, Reimann L.; Hueschen, Robert E.; and Jens, Richard A., 4,272,696, Cl. 313-60.000.

Jensen, Wayne H. Selective extraction and recovery of copper. 4,272,492, Cl. 423-24.000.

Jenssen, Hans P.: *See*—
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Jeppsson, Erik H. O., to Alfa-Laval AB. Valve. 4,271,860, Cl. 137-240.000.

Jessop, Thomas C.; and Helfer, Jeffrey L., to Eastman Kodak Company. Metering apparatus. 4,272,482, Cl. 422-65.000.

Jetter, Heinz L.: *See*—
Fill, Ernst E.; Jetter, Heinz L.; and Volk, Reinhard, 4,272,681, Cl. 250-423.00P.

Jhabvala, Murzban D., to United States of America, National Aeronautics and Space Administration. Method of making V-MOS field effect transistors utilizing a two-step anisotropic etching and ion implantation. 4,272,302, Cl. 148-1.500.

Jines, Chester G. Vegetation pulverizer. 4,272,031, Cl. 241-46.170.

Jizaimaru, Tanzo; Tanaka, Hideya; and Sajima, Yasuo, to Asahi Glass Company, Ltd. Electrode compartment. 4,272,352, Cl. 204-279.000.

John Lysaght (Australia) Limited: *See*—
Buchhorn, Peter, 4,271,653, Cl. 52-522.000.

John Wyeth & Brother Limited: *See*—
Edington, Edwin T.; and White, Alan C., 4,272,628, Cl. 546-284.000.

Johns-Manville Corporation: *See*—
Cimochowski, Anthony E., 4,272,638, Cl. 13-25.000.
Jaunarajs, Karlis L., 4,272,294, Cl. 106-99.000.

Johnson, Alton L. Adjustable trouble lamp support. 4,272,803, Cl. 362-399.000.

Johnson, Burnett H., to Exxon Research & Engineering Co. Method for producing an essentially gas and liquid impermeable low density, closed-cell, microcellular polyparabanic acid article. 4,272,467, Cl. 264-41.000.

Johnson, David S. Subterranean drain system for basements. 4,271,648, Cl. 52-169.500.

Johnson, Gerald T. Agricultural transporter. 4,272,092, Cl. 280-43.230.

Johnson, Norman A.; and Kent, Raymond C., to Armstrong Cork Company. Small round air stream heating unit. 4,272,668, Cl. 219-375.000.

Johnson, William R., to Chinook Manufacturing Co. Prefabricated fireplace for permanent installation. 4,271,815, Cl. 126-121.000.

Johnston, Linda G.: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,272,434, Cl. 260-156.000.

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Jones, Aaron U. Sawmill apparatus with vertically movable logging dogs. 4,271,736, Cl. 83-156.000.

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Jones, Dixon J. Connector device. 4,272,208, Cl. 403-396.000.

Jones, Donald W., to Analytical Systems, Inc. Solvent front detection method and manufacture. 4,272,380, Cl. 210-658.000.

Jones, Kenneth L.: *See*—
Draper, Ellsworth R., Jr.; and Jones, Kenneth L., 4,272,386, Cl. 252-8.600.

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Jones, Richard H., to Du Pont de Nemours, E. I., and Company. Thermally stable, flame-retardant polymers and selected oligomers useful therein. 4,272,429, Cl. 260-37.00N.

Jones, Winton D.; and Miller, Francis P., to Richardson-Merrell Inc. 5-(Optionally substituted phenyl)-6H-1,3,4-thiadiazine-2-amines. 4,272,532, Cl. 424-246.000.

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Warnstam, Lars-Ake; Jonsson, Rune; and Ludvigsson, Georg, 4,272,783, Cl. 358-126.000.

Joseph, Daniel, Jr. II, to Zinn, Roland C. Anti-vandalism nut assembly. 4,272,209, Cl. 403-408.000.

Joubert, Philippe; Durando, Pierre; and Fleury, Daniel, to Institut Francais du Petrole. Method for submerging an equipment of negative buoyancy. 4,271,550, Cl. 9-8.00R.

Jozef, Zurkowski: *See*—
Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, 4,272,026, Cl. 239-273.000.

Juengst, Klaus-Peter: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,272,365, Cl. 209-223.00R.

Jungbluth, Otto. Three-dimensional structures of frame beams and multiple joints. 4,271,654, Cl. 52-637.000.

Justus, Edgar J., to Beloit Corporation. Steam shower. 4,272,316, Cl. 162-206.000.

Kabele, Walter A., to Roper Industries, Inc. (Ohio). Splined shaft driving arrangement. 4,272,224, Cl. 417-360.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Ueda, Makoto; Torisawa, Akira; Satoh, Katsuhiko; Shida, Masaharu; Mandai, Masaaki; and Asano, Kazuhiro, 4,272,837, Cl. 368-80.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Sakashita, Masao; and Matsuura, Yoshiaki, 4,271,742, Cl. 84-1.260.
Uchiyama, Shigeru, 4,271,743, Cl. 84-1.260.

Kabushiki Kaisha Medos Kenkyusho: *See*—
Chikashige, Kiyoshi; and Takahashi, Nagashige, 4,271,845, Cl. 128-756.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Morozumi, Shinji; and Asakawa, Tatsushi, 4,272,840, Cl. 368-202.000.

K.K. Toyota Chuo Kenkyusho: *See*—
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.

Kadowaki, Yoshihiko, to Hitachi, Ltd. Channel device. 4,272,809, Cl. 364-900.000.

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Isa, Hiroshi; Takahashi, Masatoshi; and Kadoya, Isamu, 4,272,418, Cl. 260-23.0XA.

Kaetsu, Isao; Kumakura, Minoru; and Yoshida, Masaru, to Japan Atomic Energy Research Institute. Immobilization of enzymes or bacteria cells. 4,272,617, Cl. 435-182.000.

Kaganovich, Fanya L.: *See*—
Belkevich, Peter I.; Buslovich, Solomon J.; Dolidovich, Elena F.; Kaganovich, Fanya L.; Komov, Oktyabr P.; and Timofeeva, Ljudmila P., 4,272,527, Cl. 424-195.000.

Kah, Carl L. C., Jr. Sprinkler head. 4,272,024, Cl. 239-206.000.

Kahng, Dawon; and Shankoff, Theodore A., to Bell Telephone Laboratories, Incorporated. Fabrication of semiconductor devices having planar recessed oxide isolation region. 4,271,583, Cl. 29-571.000.

Kaibara, Nobuhiro; and Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Distribution type fuel injection pump. 4,271,806, Cl. 123-502.000.

Kakinuma, Toshihide: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,271,773, Cl. 112-158.00E.

Kakumaru, Hajime: *See*—
Tsukada, Katsushige; Hayashi, Nobuyuki; Yamada, Hideo; Ishimaru, Toshiaki; and Kakumaru, Hajime, 4,272,607, Cl. 430-288.000.

Kakumoto, Shigeru; Fujimoto, Yoshiji; and Okada, Kunihiro, to Hitachi, Ltd. Method of pattern recognition and apparatus thereof. 4,272,756, Cl. 340-146.30H.

Kali-Chemie Aktiengesellschaft: *See*—
Hagedorn, Fritz, 4,272,477, Cl. 422-50.000.

Kamila, Friedolf: *See*—
Chatfield, John F., Jr.; Bryant, Donald C.; Daly, James C.; and Kamila, Friedolf, 4,271,909, Cl. 169-70.000.

Kammerer, Werner: *See*—
Knapp, Heinrich; Eisele, Hermann; and Kammerer, Werner, 4,271,794, Cl. 123-454.000.

Kamps, Grietinus R. L.; Moltzer, Jan S. P.; and Platteeuw, Pieter J., to American Air Filter Company, Inc. Gas filter. 4,272,267, Cl. 55-499.000.

Kanchev, Kancho T.: *See*—
Velikov, Dancho N.; Kanchev, Kancho T.; Ivanov, Stanislav A.; Ivanov, Ilye H.; and Tepavicharov, Hristo D., 4,272,198, Cl. 366-65.000.

Kane, Susan M.: *See*—
Cox, Daniel E.; Kane, Susan M.; and Powers, John V., 4,272,348, Cl. 204-192.00E.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yoneda, Koji; Ohashi, Takehisa; Onishi, Masami; and Fukumitsu, Hirotaka, 4,272,517, Cl. 424-72.000.

Kaneko, Ichiro: *See*—
Kitamura, Hajime; Shimizu, Toshihide; and Kaneko, Ichiro, 4,272,622, Cl. 526-62.000.

Kaneko, Tamaki: *See*—
Satomi, Toyokazu; Koizumi, Yutaka; Nakamura, Isao; Tabata, Yasuhiro; and Kaneko, Tamaki, 4,272,180, Cl. 355-3.0SH.

Kaneko, Thomas M., to BASF Wyandotte Corporation. Machine dishwashing detergents containing low-foaming nonionic surfactants. 4,272,394, Cl. 252-99.000.

Kao, Che-I: *See*—
Siegel, Sanford A.; Yoshimine, Masao; and Kao, Che-I, 4,272,635, Cl. 568-776.000.

Kao Soap Co., Ltd.: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,272,536, Cl. 424-248.540.

Kao, Stephen S. T., to Modine Manufacturing Company. Method of soldering tube to plate. 4,272,006, Cl. 228-183.000.

Karashima, Masashi. Refrigerated show case. 4,271,680, Cl. 62-256.000.

Karelov, Jury I.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,272,033, Cl. 242-7.05B.

Karl Deutsch Pruf-und Messgerate: *See*—
Crostack, Horst-Artur, 4,271,705, Cl. 73-602.000.

Karl Lautenschlager KG Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl, 4,272,207, Cl. 403-231.000.

Karr, Dale A. Tent with inflatable tube erector. 4,271,642, Cl. 52-2.000.

Kasai, Kazumi, to Yoshida Kogyo K.K. Slider with a built-in locking device in a slide fastener. 4,271,689, Cl. 70-68.000.

Kasama, Noriyuki; and Ichikawa, Singo, to Citizen Watch Co., Ltd. Electronic watch module structure. 4,272,838, Cl. 368-88.000.

Kaschentseva, Alexandra K.: *See*—
Shtern, Maria A.; Levit, Nelli I.; Bondarenko, Alla V.; and Kaschentseva, Alexandra K., 4,272,291, Cl. 106-14.050.

Kashihara, Eiji: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,272,536, Cl. 424-248.540.

Kashiuchi, Yoshinobu; and Zinguzi, Isamu, to Sumitomo Electric Industries, Ltd. Moisture meter. 4,272,718, Cl. 324-61.00R.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,272,100, Cl. 280-650.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Collapsible baby carriage. 4,272,100, Cl. 280-650.000.

Katayama, Yoshinori; and Torii, Hiromasa, to Nissan Motor Company, Limited. Flanged vehicle roof panel with an inwardly indented side part. 4,272,120, Cl. 296-210.000.

Kato, Kazunori: *See*—
Tsuda, Takeshi; Kubota, Michio; Takagi, Kazuhiro; Shimose, Masahiro; Imamura, Yasuo; and Kato, Kazunori, 4,271,571, Cl. 29-25.180.

Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, to K.K. Toyota Chuo Kenkyusho; and Toyota Jidosha Kogyo Kabushiki Kaisha. Knocking control device. 4,271,799, Cl. 123-425.000.

Katsumata, Yutaka; Sanagi, Mitsuru; and Tanaka, Hideo, to Fujitsu Limited. Inter-subsystem direct transfer system. 4,272,819, Cl. 364-200.000.

Katsumori, Teiji; and Ishida, Kunio, to Tokico Ltd. Gas spring. 4,272,064, Cl. 267-64.00R.

Katsunuma, Tatsuo: *See*—
Mabuchi, Kenichi; and Katsunuma, Tatsuo, 4,272,041, Cl. 244-17.210.

Katunin, Vladimir M.: *See*—
Nakrokhin, Vladilen G.; and Katunin, Vladimir M., 4,272,814, Cl. 363-129.000.

Kawachi, Hideo: *See*—
Nakamichi, Niro; Kobayashi, Kozo; and Kawachi, Hideo, 4,272,792, Cl. 360-69.000.

Kawaguchi, Mamoru, to Taiyo Kogyo Company Limited. Tension structure. 4,271,641, Cl. 52-2.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; and Nishimura, Michio, 4,272,085, Cl. 277-235.00B.

Kawauchi, Shinji: *See*—
Takao, Syosuke; Kikuchi, Gunpei; Sekiguchi, Masuo; and Kawauchi, Shinji, 4,271,725, Cl. 74-730.000.

Kayaba Kogyo Kabushiki Kaisha: *See*—
Komamura, Seiji; and Suzuki, Katsuhiro, 4,272,056, Cl. 251-309.000.

Kaye, Wilbur I., to Beckman Instruments, Inc. Method and apparatus for determining the wavelength of light. 4,272,195, Cl. 356-368.000.

KCDP Corporation: *See*—
Conn, Shepard; and Kushner, Arnold, 4,271,835, Cl. 128-270.000.

Kearney, J. Kevin: *See*—
Thompson, Leonard R.; and Kearney, J. Kevin, 4,272,636, Cl. 568-776.000.

Kearney & Trecker Corporation: *See*—
Osburn, John G., 4,272,216, Cl. 409-132.000.

Keay, Robert E.; Orwoll, Edward F.; and Price, John A., to FMC Corporation. Preparation of carbamates. 4,272,441, Cl. 260-346.730.

Keefer, Kenneth S.: *See*—
McKeen, Robert S.; Keefer, Kenneth S.; and Sawyer, Theodore E., 4,272,141, Cl. 339-18.00R.

Keiper Automobiltechnik GmbH: *See*—
Kluting, Bernd; and Holweg, Rainer, 4,272,048, Cl. 248-430.000.

Kellar, Paul R. N.: *See*—
Michael, Peter C.; Taylor, Richard J.; and Kellar, Paul R. N., 4,272,787, Cl. 358-160.000.

Keller, Arnulf A.; and Keller, Norbert A. Reciprocating-piston engine, especially hot-gas engine or compressor. 4,271,669, Cl. 60-517.000.

Keller, Norbert A.: *See*—
Keller, Arnulf A.; and Keller, Norbert A., 4,271,669, Cl. 60-517.000.

Kelly, Vincent J.: *See*—
Hough, Reginald D.; and Kelly, Vincent J., 4,272,465, Cl. 264-33.000.

Kempster, Fred G. Projector cartridge for a filmstrip and a tape cassette. 4,272,167, Cl. 353-120.000.

Kennedy, Thomas N., to International Business Machines Corporation. Process of bonding sputtering targets to target electrodes. 4,272,355, Cl. 204-298.000.

Kent, Raymond C.: *See*—
Johnson, Norman A.; and Kent, Raymond C., 4,272,668, Cl. 219-375.000.

Kepley, Garry D.: *See*—
Gates, Geoffrey W.; and Kepley, Garry D., 4,272,810, Cl. 364-900.000.

Kerb, Ulrich: *See*—
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,272,630, Cl. 560-6.000.

Kerr, Colin C. Solar energy collector. 4,271,821, Cl. 126-417.000.

Kerr-McGee Corporation: *See*—
Brunsell, Dennis A.; and Riggs, Olen L., Jr., 4,272,343, Cl. 204-130.000.

Keson Industries, Inc.: *See*—
Watermann, David R., 4,272,036, Cl. 242-96.000.

Ketchum, David D.: *See*—
Weiner, Nathan K.; and Ketchum, David D., 4,272,725, Cl. 324-415.00R.

Ketner, Clyde R.; and Whitener, Philip C., to Boeing Company, The. Lightweight cargo container and fittings. 4,271,975, Cl. 220-80.000.

Kieslich, Klaus: *See*—
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,272,630, Cl. 560-6.000.

Kikuchi, Gunpei: *See*—
Takao, Syosuke; Kikuchi, Gunpei; Sekiguchi, Masuo; and Kawauchi, Shinji, 4,271,725, Cl. 74-730.000.

Kilmer, Lauren G. Filament-type weed-grass trimmer. 4,271,594, Cl. 30-276.000.

Kim, Sang H.; and Chang, Hao-jan, to Eastman Kodak Company. Buffer overcoat for CO_2 ion-selective electrodes. 4,272,328, Cl. 204-1.00T.

Kim, Sunyong P. Station wagon with adjustable rear roof panel. 4,272,121, Cl. 296-216.000.

Kim, Yung D.; Tomita, Joseph T.; and Schenck, Jay R., to Abbott Laboratories. Antibody adsorbed support method for carcinoembryonic antigen assay. 4,272,504, Cl. 424-1.000.

Kime, Wellesley R. Rapid response steam generator. 4,271,791, Cl. 122-39.000.

Kimura, Keiichi; and Negishi, Eimei, to Nippon Kogaku K.K. Apparatus for guiding continuous chip formed in lathing. 4,271,734, Cl. 82-34.00R.

Kimura, Tomoaki; and Nishino, Tadashi, to Hitachi, Ltd. Continuous casting apparatus. 4,271,894, Cl. 164-87.000.

Kimura, Toyohiko: *See*—
Hashimoto, Akihiko; Koiwai, Tamotsu; Kondo, Isao; and Kimura, Toyohiko, 4,272,171, Cl. 354-152.000.

Kindel, Erik L., to LKB-Produkter AB. Mould for moulding specimen blocks to be cut in a microtome or an ultramicrotome. 4,272,049, Cl. 249-83.000.

King, Foster. Bicycle lever assembly. 4,271,719, Cl. 74-594.200.

King Instrument Corporation: *See*—
Berube, Richard G., 4,271,955, Cl. 198-400.000.

King, James F.; and Horton, Gilbert L., to Hanes Corporation. Method of forming wire support frame member. 4,271,580, Cl. 29-447.000.

King, John H.: *See*—
Montesi, Edward N.; and King, John H., 4,271,538, Cl. 2-439.000.

King, John M.; and de Vries, Louis, to Chevron Research Company. Process of preparing molybdenum complexes, the complexes so-produced and lubricants containing same. 4,272,387, Cl. 252-46.400.

King, Robert W.: *See*—
Canning, Thomas N.; Barns, Christopher E.; Murphy, James P.; Gin, Bobby; and King, Robert W., 4,271,761, Cl. 102-504.000.

Kintgen, Dale I.; Mylrea, William J.; and Smith, William A., to Master Conveyor Corporation. Bag handling apparatus. 4,271,755, Cl. 100-52.000.

Kirkpatrick, Joel L.; and Patel, Natu R., to Gulf Oil Corporation. Semicarbazidyl phthalides and use as plant growth regulators. 4,272,279, Cl. 71-88.000.

Kishi, Ikuji: *See*—
Ando, Toshihiro; Ohgi, Hiroshi; and Kishi, Ikuji, 4,272,586, Cl. 428-419.000.

Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Photographic radiation-sensitive materials having improved antistatic property. 4,2/2,616, Cl. 430-529.000.

Kishimoto, Shinzo: *See*—
Yoneyama, Masakazu; Kishimoto, Shinzo; and Nakayama, Yasuhiro, 4,272,615, Cl. 430-527.000.

Kishline, Alan R., to Dana Corporation. Wheel suspension system. 4,271,922, Cl. 180-254.000.

Kitagawa, Masahiro: *See*—
Maitani, Yoshihisa; Kondo, Isao; Nemoto, Kazuyuki; and Kitagawa, Masahiro, 4,272,176, Cl. 354-238.000.

Kitagawa, Shuzo: *See*—
Yajima, Tadamasa; Kitagawa, Shuzo; and Hata, Hiromi, 4,272,287, Cl. 75-60.000.

Kitai, Kiyoshi; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Electric timer. 4,272,839, Cl. 368-107.000.

Kitamura, Hajime; Kurimoto, Kazuhiko; and Azuma, Koji, to Shin-Etsu Chemical Co., Ltd. Process for the preparation of vinyl chloride-based resins. 4,272,424, Cl. 260-29.6RW.

Kitamura, Hajime; Shimizu, Toshihide; and Kaneko, Ichiro, to Shin-Etsu Chemical Co., Ltd. Method for preventing polymer scale deposition in the polymerization of an ethylenically unsaturated monomer in an aqueous medium. 4,272,622, Cl. 526-62.000.

Kitterman, Roger L.: *See*—
Kydonieus, Agis F.; and Kitterman, Roger L., 4,272,520, Cl. 424-84.000.

Kiwala, Jacob: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,271,853, Cl. 131-276.000.

Kiyota, Yuhiko: *See*—
Hori, Kenji; and Kiyota, Yuhiko, 4,271,802, Cl. 123-432.000.

Klein, H. Joseph: *See*—
Herchenroeder, Robert B. H.; and Klein, H. Joseph, 4,272,289, Cl. 75-122.000.

Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, to Kraftwerk Union Aktiengesellschaft. Tornado-type separator. 4,272,260, Cl. 55-265.000.

Klein, Wolfgang, to Acla-Werke Aktiengesellschaft. Elevator guide shoe. 4,271,932, Cl. 187-95.000.

Klement, Heribert: *See*—
Carle, Hermann; Klement, Heribert; and Knobloch, Uwe, 4,272,708, Cl. 318-266.000.

Klinedinst, Keith A., to GTE Laboratories Incorporated. Electrochemical cell with improved cathode current collector. 4,272,593, Cl. 429-101.000.

Klockner-Humboldt-Deutz AG: *See*—
Duill, Helmut; and Ansen, Jakob, 4,272,710, Cl. 318-470.000.
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, 4,272,365, Cl. 209-223.00R.
Wieffen, Karl-Heinz, 4,272,367, Cl. 209-500.000.

Kloefkorn, Earl W., deceased: *See*—
Kloefkorn, Melvin L.; Kloefkorn, Earl W., deceased; and Green, Marvin V., administrator, 4,271,660, Cl. 56-14.600.

Kloefkorn, Melvin L.; Kloefkorn, Earl W., deceased; and by Green, Marvin V., administrator. Combine conveyor apparatus. 4,271,660, Cl. 56-14.600.

Klosterman, David P.: *See*—
Bopp, Robert D.; Klosterman, David P.; and Lipshield, Eugene C., 4,271,718, Cl. 74-522.000.

Klupfel, Kurt, to Hoechst Aktiengesellschaft. Photopolymerizable mixture. 4,272,609, Cl. 430-288.000.

Kluting, Bernd; and Holweg, Rainer, to Keiper Automobiltechnik GmbH. Positionally adjustable seat. 4,272,048, Cl. 248-430.000.

Knack, Albert C., Jr., to Hewlett-Packard Company. Shielded connector housing for use with a multiconductor shielded cable. 4,272,148, Cl. 339-143.00R.

Knapp, Heinrich; Eisele, Hermann; and Kammerer, Werner, to Robert Bosch GmbH. Fuel delivery apparatus. 4,271,794, Cl. 123-454.000.

Knight, Bill J.; and Knight, David L. Process for electrowinning of metals. 4,272,339, Cl. 204-106.000.

Knight, David L.: *See*—
Knight, Bill J.; and Knight, David L., 4,272,339, Cl. 204-106.000.

Knizely, James B.: *See*—
Payne, Roger E.; Rossi, Robert K.; and Knizely, James B., 4,272,309, Cl. 156-117.000.

Knobloch, Uwe: *See*—
Carle, Hermann; Klement, Heribert; and Knobloch, Uwe, 4,272,708, Cl. 318-266.000.

Knop, Karl, to RCA Corporation. Apparatus and method for measuring the ratio of two signals. 4,272,197, Cl. 356-434.000.

Knorr-Bremse GmbH: *See*—
Xaver, Wirth; and Mathias, Schorwerth, 4,271,936, Cl. 188-244.000.

Knowles, Albert H., to Rines, Robert Harvey, a part interest. Process and apparatus for accelerating growth rate of salmonoids and other fish and the like. 4,271,788, Cl. 119-3.000.

Kobayashi, Kozo: *See*—
Nakamichi, Niro; Kobayashi, Kozo; and Kawachi, Hideo, 4,272,792, Cl. 360-69.000.

Kobayashi, Masahiro. Method for manufacturing charcoals from paper sludge. 4,272,322, Cl. 201-6.000.

Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Fuel injection pump. 4,271,805, Cl. 123-459.000.

Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Fuel injection pump for internal combustion engines. 4,271,808, Cl. 123-506.000.

Kobayashi, Masayoshi: *See*—
Kaibara, Nobuhiro; and Kobayashi, Masayoshi, 4,271,806, Cl. 123-502.000.

Kobayashi, Michiaki: *See*—
Mizuno, Shogo; Shimomura, Kyoichi; and Kobayashi, Michiaki, 4,272,292, Cl. 106-22.000.

Kobayashi, Yoshikata: *See*—
Taguchi, Nobuo; Munakata, Tadashi; and Kobayashi, Yoshikata, 4,272,781, Cl. 358-100.000.

Kobori, Toshio: *See*—
Terramoto, Tougo; Matsushita, Shuzo; and Kobori, Toshio, 4,272,174, Cl. 354-195.000.

Kobylinski, Thaddeus P.: *See*—
Beach, David L.; and Kobylinski, Thaddeus P., 4,272,406, Cl. 252-430.000.
Beach, David L.; and Kobylinski, Thaddeus P., 4,272,407, Cl. 252-430.000.

Koch, Darlene M.: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Koch, Robert H.: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.

Kochs Adler AG: *See*—
Landwehr, Gunter; and Thiele, Horst, 4,271,776, Cl. 112-311.000.

Kodaira, Toshimi: *See*—
Matsuo, Osamu; Nakamura, Keijiro; and Kodaira, Toshimi, 4,271,967, Cl. 209-558.000.

Koga, Hirofumi: *See*—
Tanaka, Takashi; and Koga, Hirofumi, 4,272,745, Cl. 335-128.000.

Kohlpaintner, Georg: *See*—
Schatzler, Walter; and Kohlpaintner, Georg, 4,272,124, Cl. 296-222.000.

Kohn, Gustave K.; and Baer, Ted A., to Zoecon Corporation. Phenoxy imidates. 4,272,449, Cl. 260-453.990.

Kohno, Masaru; and Nakagawa, Yukio, to Fuji Electric Co., Ltd. Ultrasonic measuring apparatus. 4,271,708, Cl. 73-861.280.

Koike, Tsutomu: *See*—
Iguchi, Yasuhide; and Koike, Tsutomu, 4,272,805, Cl. 363-19.000.

Koiwai, Tamotsu: *See*—
Hashimoto, Akihiko; Koiwai, Tamotsu; Kondo, Isao; and Kimura, Toyohiko, 4,272,171, Cl. 354-152.000.

Koizumi, Hiroshi: *See*—
Osato, Mamoru; and Koizumi, Hiroshi, 4,272,653, Cl. 179-115.00R.

Koizumi, Yutaka: *See*—
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Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Muratani, Takuro; Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuike, Takeshi, 4,272,846, Cl. 455-296.000.

Kolb, Dieter; and Muller, Karl, to Fichtel & Sachs AG. Clutch mounting and actuating device. 4,271,950, Cl. 192-98.000.

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Kusmer, Kasimir C. Waist mounted exercise device. 4,272,072, Cl. 272-71.000.
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Bastian, Thomas W.; Lacy, Garry T.; and Vink, John J., 4,272,040, Cl. 244-3.220.
Lacy, Robert H., to Phillips Petroleum Company. Display system for displaying information in the form of a horizontally oriented curve on a raster-type CRT. 4,272,767, Cl. 340-722.000.
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Lasner, Jeffrey I.; and Aleixo, Francisco H., 4,271,838, Cl. 128-318.000.
Lasner, Jeffrey I.; and Aleixo, Francisco H., to Laschal Instruments Corp. Suture cutter. 4,271,838, Cl. 128-318.000.

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Le Bret, Lucien, to Gallay, S.A. Container seaming chuck. 4,271,778, Cl. 113-121.0AB.
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Leeper, William E., Jr. Multiple purpose woodworking apparatus. 4,271,880, Cl. 144-134.00R.
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Liebert, Ralph C., 4,271,678, Cl. 62-173.000.
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Song, Jae M.; and Ligon, Samuel B., 4,272,076, Cl. 273-58.00C.
Lindenthal, Hans; and Harz, Martin, to Voith Transmit GmbH. Double-ring universal joint. 4,271,685, Cl. 64-17.00R.
Lindl, John D., to United States of America, Energy. High density laser-driven target. 4,272,320, Cl. 176-9.000.
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, to Bayer Aktiengesellschaft. Plasticized vinyl chloride polymer. 4,272,428, Cl. 260-31.20R.
Linke, Kaljo, to N. B. Love Industries Pty. Ltd. Starch-based adhesives. 4,272,295, Cl. 106-157.000.
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Isa, Hiroshi; Takahashi, Masatoshi; and Kadoya, Isamu, 4,272,418, Cl. 260-23.0XA.
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Lippits, Gerardus J. M.; van den Broek, Arnoldus J. M.; and Dijkstra, Rinse, to U.S. Philips Corporation. Optically readable information disc. 4,272,574, Cl. 428-64.000.
Lipshield, Eugene C.: *See—*
Bopp, Robert D.; Klosterman, David P.; and Lipshield, Eugene C., 4,271,718, Cl. 74-522.000.
Lister, Paul M. Heat extracting apparatus for fireplaces. 4,271,814, Cl. 126-121.000.
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Camin, Leopoldo L.; and Liteplo, Maria P., 4,272,503, Cl. 424-1.000.
Little, Richard L., to Daig Corporation. Lead installation tool. 4,271,846, Cl. 128-785.000.
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Logan, Emanuel L. Form and label combination. 4,272,327, Cl. 283-1.00B.
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Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., 4,272,499, Cl. 423-242.000.
Long, Virgil L., Sr.: *See—*
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Lou, Liang F., to General Electric Company. Thin film varistor. 4,272,754, Cl. 338-21.000.
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Love, Leonard S., to Sydlo Inc. Liquid treatment apparatus. 4,272,369, Cl. 210-137.000.
Lubbers, Dietrich W., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Filling for optodes. 4,272,484, Cl. 422-68.000.
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Seilly, Alec H.; and Mowbray, Dorian F., 4,272,027, Cl. 239-585.000.
Thomas, Alfred W.; and op den Camp, Lutz E. A., 4,271,750, Cl. 92-98.00D.
Ludvigsson, Georg: *See—*
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Luebke, Rebecca A.: *See—*
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Lund, Robert M.: *See*—
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Lupinski, John H.; and Gorowitz, Bernard, to General Electric Company. Apparatus for fluidized bed-electrostatic coating of indefinite length substrate. 4,271,783, Cl. 118-629.000.
Lutz, Willibald; and Mooss, Heinz, to Ruthner Industrieanlagen-Aktiengesellschaft. Device for composting refuse and sewage slurry. 4,272,489, Cl. 422-209.000.
Lux, Peter, to U.S. Philips Corporation. Method of and device for reducing artefacts in computed tomography images. 4,272,820, Cl. 364-414.000.
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Lyman, George F., to Data Packaging Corporation. Frame construction. 4,271,618, Cl. 40-152.000.
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Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., to Olin Corporation. Process for the treatment of anolyte brine. 4,272,338, Cl. 204-98.000.
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Lynn-Jones, David M., to Construction Specialties, Inc. Expansion joint cover. 4,271,650, Cl. 52-395.000.
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M & W Gear Company: *See*—
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Maahs, Gunther; and Rombusch, Konrad, to Chemische Werke Huls Aktiengesellschaft. Process for the manufacture of tetrachlorocyclobutenone from hexachlorocyclobutene. 4,272,633, Cl. 568-364.000.
Maasberg, Wolfgang, to WOMA Apparatebau Wolfgang Maasberg & Co. GmbH. Swivel for high-pressure conduit-cleaning assembly. 4,272,108, Cl. 285-95.000.
Mabuchi, Kenichi; and Katsunuma, Tatsuo, to Mabuchi Motor Co., Ltd. Model helicopter device. 4,272,041, Cl. 244-17.210.
Mabuchi Motor Co., Ltd.: *See*—
Mabuchi, Kenichi; and Katsunuma, Tatsuo, 4,272,041, Cl. 244-17.210.
Mac Valves, Inc.: *See*—
Neff, James A., 4,271,864, Cl. 137-599.000.
Neff, James A., 4,271,868, Cl. 137-625.640.
Macarthys Pharmaceuticals Limited: *See*—
Simpkins, David E.; and Taylor, John B. O., 4,272,526, Cl. 424-180.000.
Machanian, William V.: *See*—
Hoskinson, William R.; Solender, Peter E.; and Machanian, William V., 4,271,741, Cl. 84-1.030.
Machines Chambon: *See*—
Corse, Louis G., 4,271,760, Cl. 101-142.000.
Mack, Robert: *See*—
Willis, Brian J.; Christenson, Philip A.; and Mack, Robert, 4,272,412, Cl. 252-522.00R.
MacKenzie, George W.; Shackelton, Clifford W.; and Yankielun, Norbert E., to International Telephone and Telegraph Corporation. Compact telephone set employing slidable actuated supervision switches. 4,272,655, Cl. 179-159.000.
MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Coaxial-to-cylindrical array transition. 4,272,740, Cl. 333-127.000.
Madison-Kipp Corporation: *See*—
Thomson, Ronald E.; and Hammermeister, David W., 4,271,930, Cl. 184-15.00A.
Maeder, Heinz B.: *See*—
Gercekci, Anil; and Maeder, Heinz B., 4,272,736, Cl. 331-108.00B.
Maese, Masayuki; and Nakakami, Tsuyoshi, to Minolta Camera Kabushiki Kaisha. Control system responsive to eraser malfunctions in electrophotographic copying machines. 4,272,183, Cl. 355-14.00R.
Maggi, Gian P.: *See*—
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Guiliano, 4,272,454, Cl. 260-544.00N.
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Guiliano, to Chimica Bulciago S.r.l. Process for the chlorination of α-aminoacids. 4,272,454, Cl. 260-544.00N.
Magnetic Peripherals Inc.: *See*—
Skarky, Loren D., 4,272,794, Cl. 360-97.000.
Maher, Richard C.: *See*—
Buchwald, Frank S.; Maher, Richard C.; and Buchina, Jerome E., 4,272,695, Cl. 310-242.000.
Mail-Ex Corporation: *See*—
Russell, Robert J., 4,271,656, Cl. 53-381.00R.
Maitani, Yoshihisa; and Tsunefuji, Katsuhiko, to Olympus Optical Co., Ltd. Photographic camera of automatic exposure control type. 4,272,168, Cl. 354-51.000.
Maitani, Yoshihisa; Kondo, Isao; Nemoto, Kazuyuki; and Kitagawa, Masahiro, to Olympus Optical Co., Ltd. Camera having an acoustic indicator for generating sounds to indicate the status of certain operating conditions. 4,272,176, Cl. 354-238.000.
Makabe, Hachiro; Watanabe, Kazuo; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Pulse motor rotation phase adjusting system of a sewing machine. 4,271,773, Cl. 112-158.00E.
Makarov, Valery A.: *See*—
Afanasiev, Mikhail M.; Ivanov, Nikolai A.; Konstantinov, Evgeny A.; and Makarov, Valery A., 4,272,030, Cl. 241-37.000.
Makovec, Francesco; Senin, Paolo; and Rovati, Luigi, to Rotta Research Laboratorium S.p.A. 5-Nitro-imidazole with antiprotozoic activity. 4,272,538, Cl. 424-250.000.
Makuta, Yoshihiro: *See*—
Yamazaki, Masahiro; Akiyama, Takayasu; Makuta, Yoshihiro; and Maruoka, Tosikuni, 4,271,740, Cl. 83-592.000.
Malchow, Max E., to RCA Corporation. Differential FM detector with series tuned filter. 4,272,726, Cl. 329-103.000.
Mandai, Masaaki: *See*—
Ueda, Makoto; Torisawa, Akira; Satoh, Katsuhiko; Shida, Masaharu; Mandai, Masaaki; and Asano, Kazuhiro, 4,272,837, Cl. 368-80.000.
Mandrin, Charles, to Sulzer Brothers Limited. Installation for generating pressure gas or mechanical energy. 4,271,665, Cl. 60-39.18B.
Mankey, Harry S.: *See*—
Oswald, Norman D.; and Mankey, Harry S., 4,272,221, Cl. 414-634.000.
Manson, Lewis A. Gravity sensor. 4,271,702, Cl. 73-382.00R.
Manufacture Provencale de Matieres Plastiques SA: *See*—
Zeltner, Bernard; and Marmonnier, Gaston, 4,271,630, Cl. 47-81.000.
Manville Forest Products: *See*—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,272,009, Cl. 229-41.00R.
Manz, Curtis T. Toothpick dispensing device. 4,271,979, Cl. 221-288.000.
Marcon, Guiliano: *See*—
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Guiliano, 4,272,454, Cl. 260-544.00N.
Marconi Company Limited, The: *See*—
Molyneux-Berry, Robert B., 4,272,737, Cl. 332-1.000.
Mark Industries: *See*—
Cullity, Richard E., 4,271,926, Cl. 182-2.000.
Markay International, Inc.: *See*—
Theuman, James L., 4,271,563, Cl. 17-71.000.
Markem Corporation: *See*—
Maxwell, William E.; Jenness, Peter, III; and Potter, Michael F., 4,271,757, Cl. 101-37.000.
Marmonnier, Gaston: *See*—
Zeltner, Bernard; and Marmonnier, Gaston, 4,271,630, Cl. 47-81.000.
Mars, Incorporated: *See*—
McLaughlin, Donald L.; and Barnes, Elwood E., 4,272,757, Cl. 340-152.00R.
Marshall, Richard L.; and Cashman, Kenneth A., to United Technologies Corporation. Premix combustor assembly. 4,271,674, Cl. 60-737.000.
Martel, Alain: *See*—
Menard, Marcel; and Martel, Alain, 4,272,437, Cl. 260-239.00A.
Martin, Jean, to Valentin S.A. Shower bar with sliding spray head. 4,271,543, Cl. 4-615.000.
Martin, Joe O.: *See*—
Cella, John A.; Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; and Vargas, Ovidio, 4,272,544, Cl. 424-273.00R.
Martin, John: *See*—
Udall, William S.; and Martin, John, 4,271,884, Cl. 157-1.000.
Martin, Mary. Inflatable lift for patient's bedpan use. 4,271,546, Cl. 5-90.000.
Martin, Philip T.: *See*—
Burgener, Robert C.; and Martin, Philip T., 4,272,707, Cl. 318-139.000.
Martin, Robert C., to Dow Chemical Company, The. Composition for preventing a resin system from setting up in a well bore. 4,272,384, Cl. 252-8.55R.
Martinson, Arthur R.; and Rogers, Victor D., to Guy F. Atkinson Company. High pressure shaft seal. 4,272,084, Cl. 277-30.000.
Maruoka, Tosikuni: *See*—
Yamazaki, Masahiro; Akiyama, Takayasu; Makuta, Yoshihiro; and Maruoka, Tosikuni, 4,271,740, Cl. 83-592.000.
Maruzzelli, Gennaro: *See*—
Croci, Marco; and Maruzzelli, Gennaro, 4,272,438, Cl. 260-239.100.
Marvin, Brian D.: *See*—
Holka, Thomas C.; and Marvin, Brian D., 4,272,105, Cl. 280-804.000.
Marvin Glass & Associates: *See*—
Kulesza, Ralph J., 4,271,744, Cl. 84-330.000.
Maschinenbau "WAM" M. Osterhof KG: *See*—
Osterhof, Klaus, 4,271,758, Cl. 101-110.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Holl, Alfred; and Wewerka, Anton, 4,271,730, Cl. 81-57.400.
Maschinenfabrik Benninger AG: *See*—
Wildi, Edwin, 4,272,038, Cl. 242-150.00R.
Mashimo, Yukio, to Canon Kabushiki Kaisha. Photographic arrangement using various electronic flash devices. 4,272,170, Cl. 354-149.000.
Mashimo, Yukio: *See*—
Iwashita, Tomonori; Fukahori, Hidehiko; and Mashimo, Yukio, 4,272,173, Cl. 354-173.000.
Massachusetts Institute of Technology: *See*—
Vayenas, Costas G.; and Ortman, David E., 4,272,336, Cl. 204-59.00R.

Master Conveyor Corporation: *See—*
Kintgen, Dale I.; Mylrea, William J.; and Smith, William A., 4,271,755, Cl. 100-52.000.

Master Modular Homes, Inc.: *See—*
del Valle, Jaime L., 4,272,050, Cl. 249-144.000.

Masters, Ian M.: *See—*
Sefton, Verner B.; and Masters, Ian M., 4,272,490, Cl. 423-18.000.

Mathews, Lester R. Apparatus for intermittent delivery of fluid under pressure. 4,271,541, Cl. 4-490.000.

Mathias, Schorwerth: *See—*
Xaver, Wirth; and Mathias, Schorwerth, 4,271,936, Cl. 188-244.000.

Matikainen, Martti, to Hunt & Moscrop (Paper Machinery) Ltd. Mechanical drive for rotatable mantle roll mounted onto a stationary axle, especially for a deflection-compensated roll mantle of a paper machine. 4,271,574, Cl. 29-115.000.

Matsuda, Kiyofumi, to Agency of Industrial Science and Technology; and Ministry of International Trade & Industry. Holographic shearing interference contrast method and interferometer. 4,272,192, Cl. 356-347.000.

Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, to Sumitomo Chemical Company, Limited. Process for the preparation of azo compounds from amino compounds in the presence of a phase transfer catalyst. 4,272,435, Cl. 260-192.000.

Matsumoto, Mitsuo, to Toshiba Kikai Kabushiki Kaisha. System for controlling torque of induction motors. 4,272,715, Cl. 318-800.000.

Matsumoto, Shinichi: *See—*
Furutani, Toshinobu; Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,272,349, Cl. 204-195.00S.

Matsumoto, Takao, to Nippon Telegraph & Telephone Corporation. Optical circulator. 4,272,159, Cl. 350-375.000.

Matsumoto, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Overcurrent protecting apparatus. 4,272,816, Cl. 364-483.000.

Matsuo, Osamu; Nakamura, Keijiro; and Kodaira, Toshimi, to Fuji Electric Co., Ltd. System for sorting elongated members. 4,271,967, Cl. 209-558.000.

Matsuoka, Tomizo: *See—*
Fukuda, Yoji; Fukushima, Fumio; Matsuoka, Tomizo; Nitta, Tsuneharu; and Hayakawa, Shigeru, 4,272,397, Cl. 252-301.60S.

Matsushita Electric Corporation of America: *See—*
Schmidt, Hans, 4,271,714, Cl. 74-202.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fukuda, Yoji; Fukushima, Fumio; Matsuoka, Tomizo; Nitta, Tsuneharu; and Hayakawa, Shigeru, 4,272,397, Cl. 252-301.60S.
Yoshida, Tomio; Nakata, Yoshinobu; Harigae, Shunji; and Sato, Toshio, 4,272,651, Cl. 369-112.000.

Matsushita Electric Works, Ltd.: *See—*
Hukagawa, Hitoshi; Shimada, Isao; Naruo, Masayuki; and Endo, Terumi, 4,272,671, Cl. 219-505.000.

Matsushita, Shuzo: *See—*
Terramoto, Tougo; Matsushita, Shuzo; and Kobori, Toshio, 4,272,174, Cl. 354-195.000.

Matsuura, Yoshiaki: *See—*
Sakashita, Masao; and Matsuura, Yoshiaki, 4,271,742, Cl. 84-1.260.

Matsuzawa, Hideshi: *See—*
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; Sato, Shosuke; and Matsuzawa, Hideshi, 4,272,674, Cl. 235-69.000.

Matthews, Gary B.: *See—*
Berglund, Sidney J.; and Matthews, Gary B., 4,272,147, Cl. 339-99.00R.

Matthews, Merton L., to Maxson Automatic Machinery Company. Method of and apparatus for slowing sheets carried by high-speed conveyors before deposit on stationary platforms or low-speed conveyors. 4,272,069, Cl. 271-182.000.

Matthews, Richard A.: *See—*
Gadbois, Richard T.; and Matthews, Richard A., 4,271,640, Cl. 51-400.000.

Matthias Spencer & Sons Limited: *See—*
Denman, Dennis, 4,271,735, Cl. 82-36.00R.

Maurer, Willy: *See—*
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,272,281, Cl. 71-90.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V: *See—*
Faubel, Manfred; Holber, William M.; and Toennies, Jan P., 4,272,699, Cl. 313-360.000.
Lubbers, Dietrich W., 4,272,484, Cl. 422-68.000.
Lubbers, Dietrich W., 4,272,485, Cl. 422-68.000.

Maxson Automatic Machinery Company: *See—*
Matthews, Merton L., 4,272,069, Cl. 271-182.000.

Maxwell, William E.; Jenness, Peter, III; and Potter, Michael F., to Markem Corporation. Rotary offset article printing system. 4,271,757, Cl. 101-37.000.

Mayer, William R.; and Pescetto, James R., to Stewart-Warner Corporation. Vacuum operated switch. 4,272,660, Cl. 200-83.00P.

Mayers, Richard R.: *See—*
Thekdi, Arvind C.; and Mayers, Richard R., 4,272,239, Cl. 432-19.000.

Mayes, Warden W., to Cosden Technology, Inc. Process for regenerating fluidizable particulate cracking catalysts. 4,272,402, Cl. 252-417.000.

Mayrand, James F., to Sprague Electric Company. Integrated circuit with I^2L and power transistors and method for making. 4,272,307, Cl. 148-187.000.

Mazzotti, Ermanno. Water distribution system for an ice making device. 4,272,025, Cl. 239-240.000.

McAlpine, James B.: *See—*
Carney, Ronald E.; and McAlpine, James B., 4,272,626, Cl. 536-17.00R.

McCain, G. Howard: *See—*
Baczek, Stanley K.; and McCain, G. Howard, 4,272,560, Cl. 427-58.000.

McCarbery, Gary P., to General Motors Corporation. Internal combustion engine control system. 4,271,797, Cl. 123-412.000.

McCarthy, Donald J.: *See—*
Sickler, Kenneth H.; McCarthy, Donald J.; and Quenneville, Raymond N., 4,271,796, Cl. 123-321.000.

McCartney, Charles P., Jr., to General Motors Corporation. Method of making battery plates. 4,271,586, Cl. 29-623.500.

McCluskey, William A. Window blind cord control apparatus. 4,271,893, Cl. 160-178.00R.

McCombie, Stuart W.: *See—*
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,272,439, Cl. 260-245.20R.

McCombs, Charles A.; and Foster, Charles H., to Eastman Kodak Company. Dehydroformylation of steroidal aldehydes. 4,272,444, Cl. 260-397.300.

McConnell, Kenneth C., to Deere & Company. Air duct system for a cotton harvester. 4,271,659, Cl. 56-13.300.

McCormick, Michael E. Counter-rotating wave energy conversion turbine. 4,271,668, Cl. 60-398.000.

McDaniel, George H., to Bendix Corporation, The. Position feedback control system for a numerically controlled machine tool. 4,272,818, Cl. 364-118.000.

McDaniel, John C.: *See—*
Chenevert, Donald J.; Grawe, John R.; and McDaniel, John C., 4,272,603, Cl. 430-155.000.

McDermott, John F., to United States Steel Corporation. Door jamb construction for coke ovens. 4,272,325, Cl. 202-248.000.

McDonald, Walter; and Seitel, Norbert J., to Charles E. Green & Son, Inc. Paint roller cage assembly apparatus and method. 4,271,579, Cl. 29-430.000.

McEvoy Oilfield Equipment Company: *See—*
Herd, David P., 4,272,055, Cl. 251-214.000.

McFadden, Russell T.; Krause, Reuben L.; and Young, R. Gregg, to Dow Chemical Company, The. Water thinnable coating compositions from aminoalkylated interpolymers. 4,272,621, Cl. 525-355.000.

McGoldrick, Gilbert A.: *See—*
Carroll, James C.; Chapman, Donald L.; Flee, Stephen L.; and McGoldrick, Gilbert A., 4,272,643, Cl. 174-48.000.

McGovarin, Roy R., to Blaw Knox Limited. Extendible screeds. 4,272,213, Cl. 404-118.000.

McGrew, Jay L. Method and apparatus for effecting subsurface, controlled, accelerated chemical reactions. 4,272,383, Cl. 210-741.000.

McIntyre, James E.; and Milburn, Alexander H., to Imperial Chemical Industries Limited. Thermotropic polyester amides. 4,272,625, Cl. 528-183.000.

McKeen, Robert S.; Keefer, Kenneth S.; and Sawyer, Theodore E., to Frederick Electronics. Electronic card cage interfacing assembly. 4,272,141, Cl. 339-18.00R.

McKinney, Gerald L.: *See—*
Bowlus, Burton R.; and McKinney, Gerald L., 4,271,537, Cl. 2-424.000.

McLaughlin, Donald L.; and Barnes, Elwood E., to Mars, Incorporated. Vending machine accountability system. 4,272,757, Cl. 340-152.00R.

McMinn, Talmage D.: *See—*
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,399, Cl. 252-373.000.
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,555, Cl. 423-415.00A.

Mead Corporation, The: *See—*
Gudorf, James L., 4,271,589, Cl. 29-878.000.

Meador, Jim D.; and Parker, Edward H., to Western Litho Plate & Supply Co. Base plate and lithographic plate prepared by sensitization thereof. 4,272,604, Cl. 430-159.000.

Meador, Jim D.; and Parker, Edward H., to Western Litho Plate & Supply Co. Base plate and lithographic plate prepared by sensitization thereof. 4,272,605, Cl. 430-169.000.

Mechling, Earl H.: *See—*
Molnar, John R.; Mechling, Earl H.; and Bell, William L., 4,272,012, Cl. 236-1.00E.

Mednikarov, Vladimir S.: *See—*
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,272,023, Cl. 239-204.000.

Medtek Corporation: *See—*
Croslin, Michael E., 4,271,844, Cl. 128-681.000.

Medtronic, Inc.: *See—*
Friedman, Harry G., 4,271,841, Cl. 128-419.00R.
Lattin, Gary A.; and Sorenson, Paul D., 4,271,840, Cl. 128-1.00R.
Stokes, Kenneth B., 4,271,847, Cl. 128-786.000.

Mehren, Herbert: *See—*
Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, 4,271,764, Cl. 104-247.000.

Mehrkam, Thomas O.; and Lockett, James F., to Geosource Inc. Ejector dwell controller for a sorting apparatus. 4,271,968, Cl. 209-564.000.

Mekosh, George, Jr., to Budd Company, The. Anti-locking with fail safe system. 4,272,133, Cl. 303-99.000.

Mellingen, Knut O., to Komiv A/S. Apparatus for producing ski tracks for a ski trail. 4,271,612, Cl. 37-10.000.

Memminger GmbH: *See*—
Memminger, Gustav; and Kuhn, Falk, 4,271,686, Cl. 66-146.000.
Memminger, Gustav; and Kuhn, Falk, 4,271,687, Cl. 66-146.000.
Memminger, Gustav; and Kuhn, Falk, to Memminger GmbH. Thread or yarn supply apparatus with movable thread supply guide means, particularly for circular knitting machines. 4,271,686, Cl. 66-146.000.
Memminger, Gustav; and Kuhn, Falk, to Memminger GmbH. Rapid maintenance thread or yarn supply apparatus, particularly for circular knitting machines. 4,271,687, Cl. 66-146.000.
Menard, Marcel; and Martel, Alain, to Bristol-Myers Company. Antibacterial agents, and 4-thio azetidinone intermediates. 4,272,437, Cl. 260-239.00A.
Meppen, Craig E.: *See*—
Ahlstrom, Ross C., Jr.; and Meppen, Craig E., 4,272,481, Cl. 422-62.000.
Merck & Co., Inc.: *See*—
Woltersdorf, Otto W., Jr.; deSolms, S. Jane; and Smith, Robert L., 4,272,537, Cl. 424-249.000.
Merola, Carl R., to Westinghouse Electric Corp. Composite groundable barrier for switchgear and grounding apparatus. 4,272,798, Cl. 361-345.000.
Merrie, Kenneth: *See*—
Walker, Brian; and Merrie, Kenneth, 4,272,318, Cl. 162-382.000.
Merrifield, Fred C. Snowshoe. 4,271,609, Cl. 36-125.000.
Merz, Theodore P.: *See*—
Riemersma, Coenraad E.; and Merz, Theodore P., 4,272,473, Cl. 264-154.000.
Meshberg, Philip. Dispenser adapted for fast pressure filling. 4,271,875, Cl. 141-3.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Tybus, Gerd; and Neuking, Hartmut, 4,272,266, Cl. 55-392.000.
Metallschlauch-Fabrik Pforzheim Witzenmann GmbH: *See*—
Berger, Peter W., 4,271,938, Cl. 188-280.000.
Metzger, Lenard M., to Eastman Kodak Company. DC to DC Converter adjustable dynamically to battery condition. 4,272,806, Cl. 363-21.000.
Meucci, Sandro: *See*—
Caldini, Oreste; and Meucci, Sandro, 4,272,516, Cl. 424-70.000.
Meusburger, Guenther, to Siemens Aktiengesellschaft. Analysis circuit for a charge coupled device. 4,272,693, Cl. 307-304.000.
Meyer, Nicolas; and Foulon, Raymond, to Societe Chimiques des Charbonnages SA. Boric anhydride solutions and their use as hardeners of resols. 4,272,403, Cl. 252-428.000.
Meyer, Victor, Jr.: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,272,650, Cl. 179-77.000.
Michael, Patrick T. Rack for skis and the like. 4,271,997, Cl. 224-42.45R.
Michael, Peter C.; Taylor, Richard J.; and Kellar, Paul R. N., to Micro Consultants Limited. T.V. Picture freeze system. 4,272,787, Cl. 358-160.000.
Michal, Rudnicki: *See*—
Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, 4,272,026, Cl. 239-273.000.
Micro Consultants Limited: *See*—
Michael, Peter C.; Taylor, Richard J.; and Kellar, Paul R. N., 4,272,787, Cl. 358-160.000.
Micro Electronics, Inc.: *See*—
Perrino, Joseph A.; and Perrino, Thomas W., 4,271,729, Cl. 81-9.50B.
Mid-West Automation, Inc.: *See*—
Eitzinger, Robert, 4,271,581, Cl. 29-564.600.
Midland-Ross Corporation: *See*—
Thekdi, Arvind C.; and Mayers, Richard R., 4,272,239, Cl. 432-19.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Fuseya, Yoshiharu, to Fuji Photo Film Co., Ltd. Method of forming a high-contrast photographic image. 4,272,606, Cl. 430-264.000.
Mifune, Hiroyuki; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,272,614, Cl. 430-441.000.
Mijovic, Miroslav V.: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,272,434, Cl. 260-156.000.
Milberger, Lionel J.; and Tucker, Albert R., to FMC Corporation. Method and apparatus for hydraulically controlling subsea well equipment. 4,271,867, Cl. 137-625.210.
Milburn, Alexander H.: *See*—
McIntyre, James E.; and Milburn, Alexander H., 4,272,625, Cl. 528-183.000.
Miles, James A.: *See*—
Beeny, Mark T.; and Miles, James A., 4,272,278, Cl. 71-86.000.
Miles Laboratories, Inc.: *See*—
Kotick, Michael P.; Schut, Robert N.; Polazzi, Joseph O.; and Leland, David L., 4,272,541, Cl. 424-260.000.
Miller, Coleman J.; and Davis, Daniel, to Westinghouse Electric Corp. Reflector antennae apparatus for limiting aperture blockage. 4,272,770, Cl. 343-782.000.
Miller, Donald L., to Facet Enterprises, Inc. Retarder controlled overrunning clutch with an axially inclined slot and pin. 4,271,941, Cl. 192-35.000.
Miller, Francis P.: *See*—
Jones, Winton D.; and Miller, Francis P., 4,272,532, Cl. 424-246.000.
Miller, James R.; and Leeson, Edward J., to B. F. Goodrich Company, The. Treating dispersions of acrylonitrile polymers. 4,272,425, Cl. 260-29.7PT.
Miller, Oliver A.: *See*—
Herr, Myron R.; and Elmore, Austin E., 4,272,764, Cl. 340-575.000.
Miller, Theodore L.: *See*—
Eastman, Jay M.; and Miller, Theodore L., 4,272,193, Cl. 356-349.000.
Miller, William H.; and Grubb, Jesse T., to Miller, William H. Pedestal crane. 4,271,970, Cl. 212-146.000.
Mills, Derek J. Post support means. 4,271,646, Cl. 52-165.000.
Millward, Thomas H.; Wylie, David G.; and Clarke, Philip C., to GKN Axles Limited. Axle assemblies. 4,271,717, Cl. 74-467.000.
Minezaki, Takashi. Hydrocarbon fuel having improved combustion efficiency. 4,272,254, Cl. 44-70.000.
Mingolla, Joseph; and Stubbings, John B. Reinforced concrete bridge decking and method of making same. 4,271,555, Cl. 14-73.000.
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Asai, Michihiko; Tsuda, Keishiro; and Okada, Akira, 4,272,559, Cl. 427-54.100.
Ichimura, Kunihiro, 4,272,620, Cl. 525-61.000.
Matsuda, Kiyofumi, 4,272,192, Cl. 356-347.000.
Minnesota Mining and Manufacturing Company: *See*—
Alexander, Jerry L., 4,272,704, Cl. 315-205.000.
Auger, Bertrand Y., 4,272,106, Cl. 282-27.500.
Berglund, Sidney J.; and Matthews, Gary B., 4,272,147, Cl. 339-99.00R.
Gadbois, Richard T.; and Matthews, Richard A., 4,271,640, Cl. 51-400.000.
Netherly, Samuel G., 4,272,572, Cl. 428-35.000.
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Maese, Masayuki; and Nakakami, Tsuyoshi, 4,272,183, Cl. 355-14.00R.
Terramoto, Tougo; Matsushita, Shuzo; and Kobori, Toshio, 4,272,174, Cl. 354-195.000.
Uesugi, Kyozo, 4,272,160, Cl. 350-429.000.
Mitsak, Dimitri M., to Koppers Company Inc. Method for heating oxygen containing gas in conjunction with a gasification system. 4,272,256, Cl. 48-206.000.
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Hotta, Shigenori; and Baba, Sadaaki, 4,272,750, Cl. 337-1.000.
Watanabe, Eiki, 4,271,931, Cl. 187-29.00R.
Yamazaki, Hitoshi; Ito, Hiroshi; Takeda, Toshiyuki; and Enomoto, Junzo, 4,272,421, Cl. 260-29.2EP.
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Hirano, Tomoyuki; Yamanaka, Akira; and Tonai, Koichi, 4,272,114, Cl. 293-133.000.
Hori, Kenji; and Kiyota, Yuhiko, 4,271,802, Cl. 123-432.000.
Tatemoto, Minoru, 4,271,897, Cl. 165-11.00R.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Takematsu, Tetsuo; Konnai, Makoto; and Ikeda, Kaoru, 4,272,283, Cl. 71-94.000.
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Miyagawa, Shiro, 4,272,592, Cl. 429-161.000.
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Mizuno, Shogo; Shimomura, Kyoichi; and Kobayashi, Michiaki, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer printing. 4,272,292, Cl. 106-22.000.
MM Systems Corporation: *See*—
Sorrells, Paul J., Jr., 4,271,651, Cl. 52-460.000.
Mobil Oil Corporation: *See*—
Dessau, Ralph M., 4,272,288, Cl. 75-101.0BE.

Rollmann, Louis D., 4,272,357, Cl. 208-89.000.
Modine Manufacturing Company: *See*—
Kao, Stephen S. T., 4,272,006, Cl. 228-183.000.
Moench, Jerry D., to Motorola, Inc. ROM Storage location having more than two states. 4,272,830, Cl. 365-45.000.
Mohan, Raam R.; and Singhal, Gopal H., to Exxon Research & Engineering Co. Regeneration of spent hydrodesulfurization catalyst with heteropoly acids. 4,272,401, Cl. 252-413.000.
Mohan, Raam R.: *See*—
Silbernagel, Bernard G.; Mohan, Raam R.; and Singhal, Gopal H., 4,272,400, Cl. 252-413.000.
Molby, Lloyd A. Hydrostatic variable ratio control system. 4,271,918, Cl. 180-6.480.
Molnar, John R.; Mechling, Earl H.; and Bell, William L. Method and system for controlling a plurality of temperature conditioning units. 4,272,012, Cl. 236-1.00E.
Moltzer, Jan S. P.: *See*—
Kamps, Grietinus R. L.; Moltzer, Jan S. P.; and Platteeuw, Pieter J., 4,272,267, Cl. 55-499.000.
Molyneux-Berry, Robert B., to Marconi Company Limited, The. Pulse width modulator for amplitude modulation circuit. 4,272,737, Cl. 332-1.000.
Mondet, Jean: *See*—
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Monsanto Company: *See*—
Auvil, Steven R.; and Penquite, Charles R., 4,272,452, Cl. 260-465.100.
Beeny, Mark T.; and Miles, James A., 4,272,278, Cl. 71-86.000.
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,399, Cl. 252-373.000.
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,555, Cl. 423-415.00A.
Gambell, James W.; and Auvil, Steven R., 4,272,451, Cl. 260-465.100.
Glass, James P., Jr., 4,272,565, Cl. 427-177.000.
Vandersall, H. Lawrence, 4,272,414, Cl. 252-602.000.
Monte, George L. A.: *See*—
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Montedison S.p.A.: *See*—
Balducci, Luigi; and Rustioni, Massimo, 4,272,296, Cl. 106-288.00B.
Montesi, Edward N.; and King, John H., to Norton Company. Safety spectacles. 4,271,538, Cl. 2-439.000.
Montgomery, Joseph S., to Cannondale Corporation. Pannier for bicycle rear carrier racks. 4,271,996, Cl. 224-32.00A.
Montich, John J.: *See*—
Ellion, M. Edmond; Putt, J. Ward; and Montich, John J., 4,272,257, Cl. 55-38.000.
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use for augmenting or enhancing the aroma and taste of smoking tobacco and smoking tobacco articles by adding thereto 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-1,3-butanedione. 4,271,853, Cl. 131-276.000.
Moon, Derryl E. Chiropractic table. 4,271,830, Cl. 128-73.000.
Moore, Betty L., administrator: *See*—
Moore, Theodore G., Sr., deceased; Moore, Theodore G., Jr., administrator; and Moore, Betty L., administrator, 4,271,809, Cl. 123-522.000.
Moore, Howard H., Jr., to Perry R. Bass, Inc.; and Sid W. Richardson Foundation, part interest to each. Self-discriminating side pocket mandrel and method of manufacturing same. 4,271,902, Cl. 166-117.500.
Moore, Theodore G., Jr., administrator: *See*—
Moore, Theodore G., Sr., deceased; Moore, Theodore G., Jr., administrator; and Moore, Betty L., administrator, 4,271,809, Cl. 123-522.000.
Moore, Theodore G., Sr., deceased; by Moore, Theodore G., Jr., administrator; and by Moore, Betty L., administrator. Vaporator. 4,271,809, Cl. 123-522.000.
Moore, Thomas J., III. Coffee roaster. 4,271,603, Cl. 34-181.000.
Mooss, Heinz: *See*—
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Moradzadeh, Yaqub, to International Business Machines Corporation. Ink development of electrostatic images. 4,272,599, Cl. 430-100.000.
Morel, Claude: *See*—
Koletar, Gabor I.; Frost, Jonathan R.; Dupont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,272,539, Cl. 424-256.000.
Moretti, Anthony L., to E. D. Bullard Company. Ventilating system for protective clothing. 4,271,833, Cl. 128-201.290.
Mori, Fumio; and Ishibashi, Kazuhisa, to Toyo Seikan Kaisha, Ltd. Method of manufacturing a metal cap with a lining affixed thereto at selected areas. 4,272,313, Cl. 156-262.000.
Mori, Keiji, to Aisin Seiki Kabushiki Kaisha. Vehicle roof construction. 4,272,123, Cl. 296-222.000.
Morikawa, Takashi: *See*—
Kadowaki, Yoshihiko; Okuda, Hiroya; and Morikawa, Takashi, 4,272,815, Cl. 364-200.000.
Morimoto, Michael T.: *See*—
Schultze, Lawrence E.; Bauer, Donald J.; and Morimoto, Michael T., 4,272,491, Cl. 423-20.000.
Moro, Daniel G.; Griffin, Gary A.; and D'Andrea, Mark J. Plastic wound bandage. 4,272,518, Cl. 424-81.000.
Morozumi, Shinji; and Asakawa, Tatsushi, to Kabushiki Kaisha Suwa Seikosha. Semiconductor integrated circuit for a timepiece. 4,272,840, Cl. 368-202.000.
Morris, Glenn H. Safety cap for containers. 4,271,971, Cl. 215-220.000.
Morris, Robert C.: *See*—
Walling, John C.; Morris, Robert C.; Peterson, Otis G.; and Jenssen, Hans P., 4,272,733, Cl. 331-94.50F.
Morscheck, Timothy J., to Eaton Corporation. Synchronized transmission with torque converter by-pass. 4,271,724, Cl. 74-720.000.
Morse, Alfred W., to Westinghouse Electric Corp. Power supply distribution system. 4,272,692, Cl. 307-268.000.
Morton-Norwich Products, Inc.: *See*—
Booth, David L.; and Gray, Joseph E., 4,272,453, Cl. 260-543.100.
Moses, John R.; and Fram, Adolph, to Fram-Israelson Enterprises. Lubricating oil filter-refiner for internal combustion engines. 4,272,371, Cl. 210-168.000.
Moshofsky, Jerome F., to Smith, Lawrence M.; Acker, G. Marts; and Smith, Franklin G., part interest to each. Internal surgical stapler. 4,272,002, Cl. 227-19.000.
Motorola, Inc.: *See*—
Gercekci, Anil; and Maeder, Heinz B., 4,272,736, Cl. 331-108.00B.
Moench, Jerry D., 4,272,830, Cl. 365-45.000.
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Motoyama, Koichiro: *See*—
Nakagaki, Shintaro; Takanashi, Itsuo; Yokokawa, Sumio; Miyoshi, Tadayoshi; Motoyama, Koichiro; and Miyazaki, Kenichi, 4,272,779, Cl. 358-47.000.
Motta, Carmelo, to Fastex s.r.l. Woven slide fastener, method and apparatus for its manufacture. 4,271,871, Cl. 139-384.00B.
Moulin, Michel: *See*—
Durville, Gerard; Moulin, Michel; Ramseier, Serge; and Zurcher, Erwin, 4,271,568, Cl. 26-9.000.
Mountain Fuel Resources, Inc.: *See*—
Coates, Ralph L., 4,272,255, Cl. 48-63.000.
Mowbray, Dorian F.: *See*—
Seilly, Alec H.; and Mowbray, Dorian F., 4,272,027, Cl. 239-585.000.
Mowery, Richard A., Jr., to Phillips Petroleum Company. Chromatographic analysis. 4,271,697, Cl. 73-61.10C.
Muchel, Franz; and Vogel, Albrecht, to Carl Zeiss-Stiftung. Optical system for illuminating the ground of the eye. 4,272,165, Cl. 351-13.000.
Mueller, Charles M.: *See*—
Davis, Max G., Jr.; and Mueller, Charles M., 4,272,795, Cl. 360-99.000.
Mulee, Dennis L.; Erbach, Arthur R.; and Ray, Frank, to Mulee, Dennis L. Insect electrocution apparatus. 4,271,626, Cl. 43-112.000.
Muller, Karl: *See*—
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Murase, Ichiki: *See*—
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Muratani, Takuro; Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuike, Takeshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Method for cancelling impulsive noise. 4,272,846, Cl. 455-296.000.
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Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, to Hitachi, Ltd. Centrifugal counterflow type contactor. 4,272,011, Cl. 233-15.000.

Nagayoshi, Katsuhiro, to Nichiro Kogyo Co, Ltd. Semiautomatic-automatic strapping machine. 4,271,655, Cl. 53-201.000.

Najarian, Leon K.: *See—*
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Najer, Henry: *See—*
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Nakacho, Yoshifumi: *See—*
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Nakade, Shinichi; and Tanaka, Michihiro, to Sumitomo Rubber Industries, Ltd. Thread wound golf ball. 4,272,079, Cl. 273-225.000.

Nakagaki, Shintaro; Takanashi, Itsuo; Yokokawa, Sumio; Miyoshi, Tadayoshi; Motoyama, Koichiro; and Miyazaki, Kenichi, to Victor Company of Japan, Ltd. Signal processing circuit for a color television camera. 4,272,779, Cl. 358-47.000.

Nakagawa, Ryuichi: *See—*
Fukano, Kazuaki; Nakagawa, Ryuichi; Fukasawa, Akira; and Nishio, Hiroshi, 4,272,396, Cl. 252-174.120.

Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and with fuel injection system to discharge fuel into secondary induction system. 4,271,795, Cl. 123-308.000.

Nakagawa, Yukio: *See—*
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Nakai, Meroji: *See—*
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Nakajima, Ryoji: *See—*
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,271,795, Cl. 123-308.000.

Nakakami, Tsuyoshi: *See—*
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Nakamichi Corporation: *See—*
Nakamichi, Niro; Kobayashi, Kozo; and Kawachi, Hideo, 4,272,792, Cl. 360-69.000.

Nakamichi, Niro; Kobayashi, Kozo; and Kawachi, Hideo, to Nakamichi Corporation. Mode changing system for a cassette tape recorder. 4,272,792, Cl. 360-69.000.

Nakamura, Isao: *See—*
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Nakamura, Keijiro: *See—*
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Nakamura, Mitsuo: *See—*
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Nakanishi, Kiyoshi; Okumura, Takeshi; Deguchi, Ryuichi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,271,803, Cl. 123-432.000.

Nakata, Yoshinobu: *See—*
Yoshida, Tomio; Nakata, Yoshinobu; Harigae, Shunji; and Sato, Toshio, 4,272,651, Cl. 369-112.000.

Nakayama, Shigeru: *See—*
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Nakayama, Yasuhiro: *See—*
Yoneyama, Masakazu; Kishimoto, Shinzo; and Nakayama, Yasuhiro, 4,272,615, Cl. 430-527.000.

Nakrokhin, Vladilen G.; and Katunin, Vladimir M. Apparatus for compensation of commutation dips in synchronizing voltage curves. 4,272,814, Cl. 363-129.000.

Nappen, Bernard H., to National Starch and Chemical Corporation. Stable gelatin dessert and process for making same. 4,272,557, Cl. 426-576.000.

Narayan, Raichur S., to Sunbeam Corporation. Provision of surface layers of copper or copper alloyed with zinc on die castings of zinc or zinc alloys. 4,272,570, Cl. 427-436.000.

Naruo, Masayuki: *See—*
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Naseem, Syed: *See—*
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Nash, Edgar M.: *See—*
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Nash, Henry R.; and Nash, Edgar M. Method and apparatus for filling honeycomb panels with fiber insulation. 4,271,876, Cl. 141-12.000.

National Can Corporation: *See—*
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National Research Development Corporation: *See—*
Evans, Mervyn; and Harris, John D., 4,271,832, Cl. 128-92.00A.
Hutchinson, Marcus H. R.; and Bradley, Daniel J., 4,272,732, Cl. 331-94.50P.
Scott, Keith; and Wright, Allen R., 4,272,333, Cl. 204-23.000.
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National Semiconductor Corporation: *See—*
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Natori, Minoru: *See—*
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Naugle, Richard L.: *See—*
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NCR Corporation: *See—*
Blanford, Denis M.; and Naseem, Syed, 4,272,675, Cl. 235-463.000.
Schmidt, Carson T.; Ward, William P.; and Young, Rocky M. Y., 4,272,829, Cl. 364-900.000.

Nealy, Robert H. Integrated sewage treatment system. 4,272,016, Cl. 237-56.000.

Neely, Raymond J., to Refreshment Machinery Incorporated. Brewing mechanism. 4,271,753, Cl. 99-289.00R.

Neese, Wayne E.: *See—*
Lychyk, George S.; and Neese, Wayne E., 4,272,140, Cl. 339-17.0CF.

Neff, James A., to Mac Valves, Inc. Pressure regulating valve. 4,271,864, Cl. 137-599.000.

Neff, James A., to Mac Valves, Inc. Pilot operated pilot valve. 4,271,868, Cl. 137-625.640.

Negi, Virendra S.; and Peters, Arthur, to Honeywell Information Systems Inc. Arithmetic logic apparatus for a data processing system. 4,272,828, Cl. 364-900.000.

Negishi, Eimei: *See—*
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Nelson, Don S.: *See—*
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Nemoto, Kazuyuki: *See—*
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Nesses, Morton. High-precision electrical signal attenuator structures. 4,272,739, Cl. 333-81.00A.

Netherly, Samuel G., to Minnesota Mining and Manufacturing Company. Vibration isolation structure. 4,272,572, Cl. 428-35.000.

Neti, Radhakrishna M., to Beckman Instruments, Inc. Nitric oxide interference free sulfur dioxide fluorescence analyzer. 4,272,248, Cl. 23-232.00R.

Neuking, Hartmut: *See—*
Tybus, Gerd; and Neuking, Hartmut, 4,272,266, Cl. 55-392.000.

Neustadt, Bernard R.; and Gold, Elijah H., to Schering Corporation. Omega-[4-(polyfluoro-2-hydroxy-2-propyl)-2,3,6-substituted-phenoxy and phenylthio]alkanoic acids and compounds related thereto. 4,272,550, Cl. 424-324.000.

New England Machinery, Inc.: *See—*
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New England Nuclear Corporation: *See—*
Camin, Leopoldo L.; and Liteplo, Maria P., 4,272,503, Cl. 424-1.000.

Newman, Raymond A., to NP Industries, Inc. Operations control system. 4,272,761, Cl. 340-500.000.

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Nichiro Kogyo Co, Ltd.: *See—*
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Nichols, Lawrence J.: *See—*
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Nickles, Francois, to Ebauches Electroniques SA. Timepiece. 4,272,841, Cl. 368-224.000.

Nicolay, Hugh C., to Harris Corporation. Integrated circuit fuse. 4,272,753, Cl. 337-297.000.

Nidola, Antonio: *See—*
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,272,354, Cl. 204-290.00R.

Niedballa, Ulrich; and Bottcher, Irmgard, to Schering, Aktiengesellschaft. Pharmacologically active 4,5-diaryl-2-substituted-imidazoles. 4,272,543, Cl. 424-273.00R.

Niedospial, John J.: *See—*
Sherman, Larry; and Niedospial, John J., 4,272,035, Cl. 242-71.100.

Niedzialkowski, John: *See—*
Sokoly, Theodore O.; and Niedzialkowski, John, 4,272,411, Cl. 252-516.000.

Nieuwendijk, Joris A. M.; Vink, Nicolaas G.; and Heijnemans, Werner A. L., to U.S. Philips Corporation. Self-converging deflection units for color display tubes of different screen formats. 4,272,727, Cl. 335-213.000.

Niigata Engineering Co., Ltd.: *See—*
Etoh, Akio, 4,271,780, Cl. 114-144.00E.

Niki, Shoji; and Yoshino, Yuji, to Takeda Riken Kogyo Kabushikikaisha. Electric field intensity measuring apparatus. 4,272,719, Cl. 324-72.000.

Niklewski, Jerzy B.: *See—*
Eggerding, Carl L.; Gonzales, Frank, Jr.; and Niklewski, Jerzy B., 4,272,500, Cl. 423-327.000.

Niksich, Eugene J.; and Underwood, J. Larry, to Dynatron/Bondo Corporation. Glue dispenser. 4,271,982, Cl. 222-83.000.

Nilsen, Carl J., to SWS Incorporated. Z-Bar guide apparatus. 4,272,004, Cl. 228-17.500.
Nippon Atsudenki K.K.: *See*—
Ogikubo, Masaru, 4,272,652, Cl. 369-139.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iijima, Masakatsu, 4,272,657, Cl. 200-5.00A.
Ogita, Minoru, 4,272,788, Cl. 358-189.000.
Nippon Kinzoku Co., Ltd.: *See*—
Tuji, Toshihiko, 4,272,749, Cl. 336-233.000.
Nippon Kogaku K.K.: *See*—
Kimura, Keiichi; and Negishi, Eimei, 4,271,734, Cl. 82-34.00R.
Nippon Kokan Kabushiki Kaisha: *See*—
Fukuda, Shuzo; Watanabe, Tsutomu; and Abe, Masahiro, 4,272,334, Cl. 204-27.000.
Nippon Soda Co., Ltd.: *See*—
Imamura, Juichi, 4,272,634, Cl. 568-432.000.
Nippon Soken, Inc.: *See*—
Wakamatsu, Hisato, 4,271,728, Cl. 74-866.000.
Nippon Steel Corporation: *See*—
Fuziwara, Shigeru; and Tamura, Shinichi, 4,272,062, Cl. 266-284.000.
Nippon Telegraph & Telephone Corporation: *See*—
Matsumoto, Takao, 4,272,159, Cl. 350-375.000.
Nippon Zeon Co., Ltd.: *See*—
Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Akiyama, Shinichi, 4,272,637, Cl. 568-780.000.
Yamazaki, Masahiro; Akiyama, Takayasu; Makuta, Yoshihiro; and Maruoka, Tosikuni, 4,271,740, Cl. 83-592.000.
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru. Electrophotographic sensitizing screen. 4,272,597, Cl. 430-68.000.
Nishikawa, Yukio, to Precision Monolithics, Inc. Quasi-resistive battery feed for telephone circuits. 4,272,656, Cl. 179-170.0NC.
Nishimoto, Keiji: *See*—
Shirai, Kazunari; Tanaka, Izumi; Tanaka, Shinpei; and Nishimoto, Keiji, 4,271,582, Cl. 29-571.000.
Nishimura, Michio: *See*—
Fujikawa, Tetsuzo; and Nishimura, Michio, 4,272,085, Cl. 277-235.00B.
Nishimura, Sadanori; Yamada, Yoji; Shimizu, Takeyuki; and Yamashita, Masaru, to Honda Giken Kogyo Kabushiki Kaisha. Check valve apparatus for oil pressure operated clutch. 4,271,951, Cl. 192-106.00F.
Nishino, Tadashi: *See*—
Kimura, Tomoaki; and Nishino, Tadashi, 4,271,894, Cl. 164-87.000.
Nishino, Tomoyoshi, to Otsuka Pharmaceutical Co., Ltd. Method for preparing antigen and antibody. 4,272,433, Cl. 260-112.50R.
Nishio, Hiroshi: *See*—
Fukano, Kazuaki; Nakagawa, Ryuichi; Fukasawa, Akira; and Nishio, Hiroshi, 4,272,396, Cl. 252-174.120.
Nishioka, Kunihiko: *See*—
Sunami, Yoshihiko; and Nishioka, Kunihiko, 4,272,324, Cl. 201-21.000.
Nissan Motor Company, Limited: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,271,939, Cl. 192-3.300.
Katayama, Yoshinori; and Torii, Hiromasa, 4,272,120, Cl. 296-210.000.
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,271,795, Cl. 123-308.000.
Suzuki, Suzuo; Hata, Yoshitaka; and Ohnishi, Akihiro, 4,271,811, Cl. 123-571.000.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,271,721, Cl. 74-695.000.
Nisshin Steel Co., Ltd.: *See*—
Tsuda, Takeshi; Kubota, Michio; Takagi, Kazuhiro; Shimose, Masahiro; Imamura, Yasuo; and Kato, Kazunori, 4,271,571, Cl. 29-25.180.
Nitta, Tsuneharu: *See*—
Fukuda, Yoji; Fukushima, Fumio; Matsuoka, Tomizo; Nitta, Tsuneharu; and Hayakawa, Shigeru, 4,272,397, Cl. 252-301.60S.
Noerager, Jere A.; Taft, Daniel G.; and Bednar, John M., to Exxon Production Research Company. Riser tensioner system. 4,272,059, Cl. 254-392.000.
Noguchi, Yoshio; and Ito, Tsuneo, to Hitachi, Ltd. Data line potential setting circuit and MIS memory circuit using the same. 4,272,834, Cl. 365-230.000.
Nohira, Hidetaka: *See*—
Yamakawa, Yoshio; Toyoda, Toshikazu; and Nohira, Hidetaka, 4,271,801, Cl. 123-432.000.
Noland, Joseph R., to General Electric Company. Heat pump control system. 4,271,899, Cl. 165-29.000.
Nomura, Hirokazu: *See*—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,272,464, Cl. 264-22.000.
Northern Engineering Industries Limited: *See*—
Somerville, William M., 4,272,706, Cl. 318-6.000.
Northern, James, to Rolls-Royce Limited. Lubricant supply device. 4,271,928, Cl. 184-6.400.
Northrop Corporation: *See*—
Lakin, Kenneth M., 4,271,707, Cl. 73-614.000.
Norton Company: *See*—
Montesi, Edward N.; and King, John H., 4,271,538, Cl. 2-439.000.
Novotny, Jurgen: *See*—
Frieser, Edwin; and Novotny, Jurgen, 4,271,980, Cl. 221-297.000.
Nowak, Manfred: *See*—
Viertel, Lothar; and Nowak, Manfred, 4,272,118, Cl. 296-97.00R.
Nowak, Robert A., to Motorola, Inc. Process of manufacturing a encapsulated hybrid circuit assembly. 4,271,588, Cl. 29-827.000.
NP Industries, Inc.: *See*—
Newman, Raymond A., 4,272,761, Cl. 340-500.000.
Nyfeldt, Harry; and Bernhardsson, Klas Y. T. Floating fence for the collection of liquid impurities as for example oil on a water surface. 4,272,214, Cl. 405-72.000.
Occidental Oil Shale, Inc.: *See*—
Hutchins, Ned M.; and Studebaker, Irving G., 4,272,127, Cl. 299-2.000.
Occidental Research Corporation: *See*—
Compton, Leslie E., 4,272,361, Cl. 208-254.00R.
Ochsner, Jon K., to Deere & Company. Adjustable mount for a tractor cab. 4,271,921, Cl. 180-89.120.
Oda, Kazutaka; and Ohba, Hisao, to Fuji Photo Film Co., Ltd. Electrolytic graining method. 4,272,342, Cl. 204-129.400.
Ogata, Yuzuru; and Nakacho, Yoshifumi, to Otsuka Chemical Co. Ltd. Process for separating cyclic phosphazene oligomers. 4,272,382, Cl. 210-660.000.
Ogawa, Hiroshi: *See*—
Takigawa, Hiroyoshi; Yahagi, Mitsuhisa; and Ogawa, Hiroshi, 4,271,885, Cl. 152-209.00R.
Ogawa, Junkichi: *See*—
Shibaoka, Haruo; and Ogawa, Junkichi, 4,272,613, Cl. 430-364.000.
Ogikubo, Masaru, to Nippon Atsudenki K.K. Moving coil type stereophonic pickup cartridge. 4,272,652, Cl. 369-139.000.
Ogino, Takao: *See*—
Kotani, Yasutoyo; Sawada, Kazuo; Nagai, Shuzo; Ogino, Takao; and Watabe, Seiji, 4,272,351, Cl. 204-202.000.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Receiver for television sound multiplex broadcasting and FM stereo multiplex broadcasting. 4,272,788, Cl. 358-189.000.
Ohara, Muneyuki: *See*—
Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Nakamura, Mitsuo; and Amano, Takayoshi, 4,272,003, Cl. 228-13.000.
Ohashi, Haruo: *See*—
Fujinaka, Yoshiaki; Ohashi, Haruo; Miyazaki, Masahito; Mizuno, Kenzi; and Kuwabara, Fukuzi, 4,272,225, Cl. 417-417.000.
Ohashi, Takehisa: *See*—
Yoneda, Koji; Ohashi, Takehisa; Onishi, Masami; and Fukumitsu, Hirotaka, 4,272,517, Cl. 424-72.000.
Ohba, Hisao: *See*—
Oda, Kazutaka; and Ohba, Hisao, 4,272,342, Cl. 204-129.400.
Ohgi, Hiroshi: *See*—
Ando, Toshihiro; Ohgi, Hiroshi; and Kishi, Ikuji, 4,272,586, Cl. 428-419.000.
Ohio State University, The: *See*—
Collins, Stuart A., Jr.; Sengupta, Uday K.; and Gerlach, Ulrich H., 4,272,157, Cl. 350-374.000.
Ohkawa, Michihisa: *See*—
Muratani, Takuro; Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuike, Takeshi, 4,272,846, Cl. 455-296.000.
Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Power assist mechanism. 4,271,670, Cl. 60-554.000.
Ohnishi, Akihiro: *See*—
Suzuki, Suzuo; Hata, Yoshitaka; and Ohnishi, Akihiro, 4,271,811, Cl. 123-571.000.
Ohta, Masafumi: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,272,598, Cl. 430-72.000.
Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,271,939, Cl. 192-3.300.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,271,721, Cl. 74-695.000.
Oinuma, Norimasa: *See*—
Teshima, Toru; Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,272,702, Cl. 313-493.000.
Oishi, Kiyohiko: *See*—
Watanabe, Noboru; Inoue, Tokuta; and Oishi, Kiyohiko, 4,272,460, Cl. 261-53.000.
Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Nakamura, Mitsuo; and Amano, Takayoshi, to Japanese National Railways; and Hakusan Seisakusho Co., Ltd. Butt welding and burr shearing machine for reinforce steel. 4,272,003, Cl. 228-13.000.
Okada, Akira: *See*—
Asai, Michihiko; Tsuda, Keishiro; and Okada, Akira, 4,272,559, Cl. 427-54.100.
Okada, Kunihiro: *See*—
Kakumoto, Shigeru; Fujimoto, Yoshiji; and Okada, Kunihiro, 4,272,756, Cl. 340-146.30H.
Okamoto, Tetsuro: *See*—
Inui, Norio; Kume, Noriaki; and Okamoto, Tetsuro, 4,272,827, Cl. 364-764.000.
Okuda, Hiroya: *See*—
Kadowaki, Yoshihiko; Okuda, Hiroya; and Morikawa, Takashi, 4,272,815, Cl. 364-200.000.
Okumura, Takeshi: *See*—
Nakanishi, Kiyoshi; Okumura, Takeshi; Deguchi, Ryuichi; and Tanahashi, Toshio, 4,271,803, Cl. 123-432.000.
Okura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic aperture control device. 4,272,175, Cl. 354-274.000.

Olefirenko, Vladimir N.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,272,033, Cl. 242-7.05B.
Olin Corporation: *See*—
Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., 4,272,338, Cl. 204-98.000.
Oliver, David W., to United States of America, Army. Erosion lithography to abrade a pattern onto a substrate. 4,272,612, Cl. 430-323.000.
Olympus Optical Co., Ltd.: *See*—
Hashimoto, Akihiko; Koiwai, Tamotsu; Kondo, Isao; and Kimura, Toyohiko, 4,272,171, Cl. 354-152.000.
Ishimoto, Osamu; Tsuda, Hiroshi; and Miyashita, Kiyoshi, 4,271,784, Cl. 118-652.000.
Maitani, Yoshihisa; and Tsunefuji, Katsuhiko, 4,272,168, Cl. 354-51.000.
Maitani, Yoshihisa; Kondo, Isao; Nemoto, Kazuyuki; and Kitagawa, Masahiro, 4,272,176, Cl. 354-238.000.
Omron Tateisi Electronics Co.: *See*—
Tanaka, Takashi; and Koga, Hirofumi, 4,272,745, Cl. 335-128.000.
O'Neill, Cormac G.; and Smiley, Parker C., to Physics International Company. Micro-metering system. 4,271,989, Cl. 222-282.000.
Onishi, Masami: *See*—
Yoneda, Koji; Ohashi, Takehisa; Onishi, Masami; and Fukumitsu, Hirotaka, 4,272,517, Cl. 424-72.000.
op den Camp, Lutz E. A.: *See*—
Thomas, Alfred W.; and op den Camp, Lutz E. A., 4,271,750, Cl. 92-98.00D.
Opelika Manufacturing Corporation: *See*—
Burton, Perry E.; and Brocklehurst, Charles E., 4,271,767, Cl. 112-2.000.
Burton, Perry E., 4,271,774, Cl. 112-262.100.
Orscheln Co.: *See*—
Bopp, Robert D.; Klosterman, David P.; and Lipshield, Eugene C., 4,271,718, Cl. 74-522.000.
Orthoplant Orthopadische Implantate GmbH & Co.: *See*—
Rehder, Gunther, 4,271,849, Cl. 128-92.00E.
Ortman, David E.: *See*—
Vayenas, Costas G.; and Ortman, David E., 4,272,336, Cl. 204-59.00R.
Orwoll, Edward F.: *See*—
Keay, Robert E.; Orwoll, Edward F.; and Price, John A., 4,272,441, Cl. 260-346.730.
Orzel, Edward S., to Dana Corporation. Hydraulic brake warning switch. 4,272,659, Cl. 200-82.00D.
Osato, Mamoru; and Koizumi, Hiroshi, to Sony Corporation. Loudspeaker and a method of producing the same. 4,272,653, Cl. 179-115.00R.
Osborne, Harry E. Fluid pump and method for operating same. 4,272,226, Cl. 417-418.000.
Osborne, Robert L., to LaSalle Machine Tool, Inc. Mechanical transfer bar drive assembly. 4,271,957, Cl. 198-737.000.
Osburn, John G., to Kearney & Trecker Corporation. Machine tool lubrication system. 4,272,216, Cl. 409-132.000.
Oshiro, Susumu: *See*—
Ishibashi, Kuniaki; Shiraishi, Norio; and Oshiro, Susumu, 4,272,156, Cl. 350-96.260.
Osterhof, Klaus, to Maschinenbau "WAM" M. Osterhof KG. Selective locking display wheels in digit printers. 4,271,758, Cl. 101-110.000.
Osugi, Motoyoshi: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,272,536, Cl. 424-248.540.
Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Undercarriage for adverse terrain vehicles. 4,272,221, Cl. 414-634.000.
Otsuka Chemical Co. Ltd.: *See*—
Ogata, Yuzuru; and Nakacho, Yoshifumi, 4,272,382, Cl. 210-660.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Nishino, Tomoyoshi, 4,272,433, Cl. 260-112.50R.
Otsuka, Yasuhiro: *See*—
Furutani, Toshinobu; Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,272,349, Cl. 204-195.00S.
Ottenheimer, Charles J. Multiple camera mounting bracket. 4,272,177, Cl. 354-293.000.
Owen, Calvin P.: *See*—
Vicino, Robert K.; and Owen, Calvin P., 4,271,620, Cl. 40-406.000.
Owen, Robert G. F., to Waste Lubricating Oils Limited. Method and apparatus for re-processing waste oil. 4,272,359, Cl. 208-179.000.
Owens-Corning Fiberglas Corporation: *See*—
Grubka, Lawrence J., 4,272,272, Cl. 65-1.000.
Thompson, Thomas K., 4,272,271, Cl. 65-1.000.
Owens-Illinois, Inc.: *See*—
Santiago, Edgardo, 4,272,587, Cl. 428-432.000.
Oxy Metal Industries Corporation: *See*—
Combs, Daniel J., 4,272,335, Cl. 204-52.00R.
Oyama, Hiroo; and Yokouchi, Takashi, to Ushio Denki Kabushikikaisha. Tubular incandescent lamp. 4,272,698, Cl. 313-272.000.
Paimblant, Paul: *See*—
Dubois, Jean-Claude; Eranian, Armand; and Paimblant, Paul, 4,272,589, Cl. 428-442.000.
Papantoniou, Christos; and Mondet, Jean, to L'Oreal. Cosmetic compositions for treating hair. 4,272,511, Cl. 424-47.000.
Pape, Wilhelm, to WABCO Westinghouse GmbH. Pivotal piston machine. 4,272,229, Cl. 417-481.000.
Parant, Francine: *See*—
Chedid, Louis; Choay, Jean; Lederer, Edgar; Lefrancier, Pierre; Parant, Monique; and Parant, Francine, 4,272,524, Cl. 424-177.000.
Parant, Monique: *See*—
Chedid, Louis; Choay, Jean; Lederer, Edgar; Lefrancier, Pierre; Parant, Monique; and Parant, Francine, 4,272,524, Cl. 424-177.000.
Parfums Rochas: *See*—
Quinard, Yves, 4,271,974, Cl. 215-331.000.
Pargeter, John K.: *See*—
Clark, Ian S. R.; and Pargeter, John K., 4,272,463, Cl. 264-12.000.
Parker, Edward H.: *See*—
Meador, Jim D.; and Parker, Edward H., 4,272,604, Cl. 430-159.000.
Meador, Jim D.; and Parker, Edward H., 4,272,605, Cl. 430-169.000.
Parker-Hannifin Corporation: *See*—
Foord, Brian A.; and Leutz, Donald C., 4,272,368, Cl. 210-90.000.
Parrent, Buddy R. E. Adhesively attachable rotatable sole plate for shoes. 4,271,610, Cl. 36-136.000.
Parsons, Charles F.: *See*—
Goldberg, Gerald; Myers, Charles L.; Parsons, Charles F.; and Steffancin, William, 4,272,584, Cl. 428-412.000.
Pascod nee Pacescu, Aurelie: *See*—
Crete, Micheline M. J.; Crete, Pierre G. C.; and Pascod nee Pacescu, Aurelie, 4,272,385, Cl. 252-608.000.
Pashkov, Alexandr N.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,272,033, Cl. 242-7.05B.
Passalenti, Beppino; Giuliani, Gino; and Fiorani, Osvaldo, to Societa Italiana Resine S.I.R. S.p.A. Film-forming resin for use in anti-corrosive and can-coating compositions. 4,272,416, Cl. 260-18.0EP.
Passarelli, Camillo L.: *See*—
Halfpenny, Paul F.; Passarelli, Camillo L.; and Starrett, Philip S., 4,272,014, Cl. 236-44.00B.
Patel, Natu R.: *See*—
Kirkpatrick, Joel L.; and Patel, Natu R., 4,272,279, Cl. 71-88.000.
Paton, W. Donald: *See*—
Steenson, Thomas W.; and Paton, W. Donald, 4,271,737, Cl. 83-171.000.
Steenson, Thomas W.; and Paton, W. Donald, 4,272,065, Cl. 269-46.000.
Patpan Inc.: *See*—
Dubourg, Jean-Pierre, 4,271,600, Cl. 34-92.000.
Patrin, Raymond A. Powercycle. 4,272,094, Cl. 280-217.000.
Patterson, Michael F.; Cheung, Harry; and Wang, David I. J., to Union Carbide Corporation. Gas gettering system. 4,272,259, Cl. 55-74.000.
Paul, William F. Tractor-mounted laterally undercutting transplant digging machine. 4,271,611, Cl. 37-2.00R.
Paulson, Danton L.: *See*—
Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., 4,272,340, Cl. 204-114.000.
Paumellerie Electrique: *See*—
Saigne, Gerard, 4,271,977, Cl. 220-371.000.
Pavitt, Frederick C. Wheel camber and castor measurement apparatus. 4,271,599, Cl. 33-336.000.
Payne, Roger E.; Rossi, Robert K.; and Knizely, James B., to Goodyear Tire & Rubber Company, The. Process for molding reinforced articles. 4,272,309, Cl. 156-117.000.
Pearce, James C.; and Williams, Richard L. Wheelchair brake attachment. 4,271,933, Cl. 188-2.00F.
Pearey, John T., to Coal Industry (Patents) Limited. Mineral mining installation. 4,272,129, Cl. 299-31.000.
Pearman, A. Noel J. System for in situ meter testing. 4,271,694, Cl. 73-3.000.
Pease, George E., to Boeing Company, The. Reduced back pressure, anti-cavitation valve system. 4,271,749, Cl. 91-358.00R.
Pedone, Egidio, to Rockwell-Rimoldi, S.p.A. Workpiece trimming device for sewing machines. 4,271,771, Cl. 112-122.000.
Peerless Instrument Co., Inc.: *See*—
Deutsch, Simon, 4,272,826, Cl. 364-709.000.
Pelat, Roger P.; and Le Pierres, Gildas, to International Vibration Engineering. Inertial device to prevent and permit motion between two members. 4,271,935, Cl. 188-185.000.
Pelt & Hooykaas B.V.: *See*—
Hooykaas, Carel W. J., 4,272,293, Cl. 106-73.600.
Peluso, Nicholas. Portable tackle and bait holder. 4,271,624, Cl. 43-54.50R.
Penn-Plax Plastics, Inc.: *See*—
Goldman, Marvin A.; Goldman, Jerome N.; and DiMarchi, Silvio J., 4,272,672, Cl. 219-523.000.
Pennant Products, Inc.: *See*—
Lewinger, Nathan; and Gillis, John A., 4,272,824, Cl. 364-502.000.
Penner, Horst: *See*—
Bendler, Hellmut; Homburg, Axel; and Penner, Horst, 4,271,747, Cl. 411-20.000.
Penner, Nicholas. Fish scaler. 4,271,562, Cl. 17-67.000.
Pennish, John S.: *See*—
Carman, Justice N., 4,272,488, Cl. 422-199.000.
Pennsylvania Engineering Corporation: *See*—
Schempp, Eberhard G., 4,272,286, Cl. 75-51.000.
Penquite, Charles R.: *See*—
Auvil, Steven R.; and Penquite, Charles R., 4,272,452, Cl. 260-465.100.

Penzien, Klaus: *See*—
Hahn, Klaus; Naarmann, Herbert; Penzien, Klaus; and Weber, Heinz, 4,272,583, Cl. 428-407.000.
Perina, Joseph, to Velcro USA Inc. Shear attachments using hook and loop fastener elements. 4,271,566, Cl. 24-204.000.
Perkin-Elmer Corporation, The: *See*—
Shafer, David R., 4,272,152, Cl. 350-27.000.
Perrino, Joseph A.; and Perrino, Thomas W., to Micro Electronics, Inc. Wire stripping device. 4,271,729, Cl. 81-9.50B.
Perrino, Thomas W.: *See*—
Perrino, Joseph A.; and Perrino, Thomas W., 4,271,729, Cl. 81-9.50B.
Perry, Fred. Mechanical concentric support. 4,272,088, Cl. 279-114.000.
Perry R. Bass, Inc.: *See*—
Moore, Howard H., Jr., 4,271,902, Cl. 166-117.500.
Perry, Ronald R.: *See*—
Crosby, Philip C. S.; Barrios, Philip A.; and Perry, Ronald R., 4,272,689, Cl. 307-147.000.
Pescetto, James R.: *See*—
Mayer, William R.; and Pescetto, James R., 4,272,660, Cl. 200-83.00P.
Peters, Arthur: *See*—
Negi, Virendra S.; and Peters, Arthur, 4,272,828, Cl. 364-900.000.
Peters, Beldon A., to Exxon Production Research Company. Fluid sampling device and method of sampling fluid. 4,271,704, Cl. 73-864.630.
Peterson, Otis G.: *See*—
Walling, John C.; Morris, Robert C.; Peterson, Otis G.; and Jenssen, Hans P., 4,272,733, Cl. 331-94.50F.
Petrochem Consultants, Inc.: *See*—
Higgins, Robert D., 4,272,270, Cl. 62-24.000.
Pfarrwaller, Erwin, to Sulzer Brothers Limited. Drive mechanism for a sub-mechanism of a weaving machine. 4,271,872, Cl. 139-439.000.
Pfeiffer, Randall R., to Williams Electronics, Inc. Processor controlled sound synthesizer. 4,272,649, Cl. 179-1.0SM.
Phelan, Michael B.: *See*—
Ruth, Harvey L.; and Phelan, Michael B., 4,272,458, Cl. 261-23.00A.
Phenol Engineering S.a.r.l.: *See*—
Schwob, Alain L. C.; Busschaert, Bruno J.; and Ivorra, Claude A. M., 4,271,825, Cl. 126-450.000.
Philagro S.A.: *See*—
Bernard, Andre; Disdier, Andre; and Royer, Michel, 4,272,448, Cl. 260-448.00R.
Philibert, Daniel: *See*—
Teutsch, Jean G.; and Philibert, Daniel, 4,272,530, Cl. 424-238.000.
Philipp, Warren H.: *See*—
Hsu, Li-Chen; Sheibley, Dean W.; and Philipp, Warren H., 4,272,470, Cl. 264-104.000.
Phillips, Kevin J., to RCA Corporation. Nutation damping in a dual-spin spacecraft. 4,272,045, Cl. 244-170.000.
Phillips Petroleum Company: *See*—
Austin, Oliver K., 4,272,487, Cl. 422-150.000.
Lacy, Robert H., 4,272,767, Cl. 340-722.000.
Mowery, Richard A., Jr., 4,271,697, Cl. 73-61.10C.
Pool, Joe V., 4,272,823, Cl. 364-500.000.
Roof, Lewis B., 4,271,703, Cl. 73-863.110.
Physics International Company: *See*—
O'Neill, Cormac G.; and Smiley, Parker C., 4,271,989, Cl. 222-282.000.
Pichler, Gunther: *See*—
Rothhaas, Friedrich; and Pichler, Gunther, 4,272,137, Cl. 312-214.000.
Picker Chemicals Inc.: *See*—
Brambley, Michael I.; Myers, Herbert J.; and Rios, Januario R., Jr., 4,271,965, Cl. 206-219.000.
Pieh, Stefan; and Czepel, Hubert, to Chemie Linz Aktiengesellschaft. Additive for inorganic binders. 4,272,430, Cl. 260-39.00R.
Pieper, Rudolf: *See*—
Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, 4,272,260, Cl. 55-265.000.
Pierre Fabre S.A.: *See*—
Ducros, Luc; and Navarro, Roger, 4,271,984, Cl. 222-94.000.
Pierrel S.p.A.: *See*—
Riva, Mario; and Toscano, Luciano, 4,272,446, Cl. 260-397.450.
Pignatti, Ugo. Sewing machine attachment for edgings and collars. 4,271,772, Cl. 112-137.000.
Piloni, Taddeo: *See*—
Valente, Paolo; and Piloni, Taddeo, 4,271,752, Cl. 99-289.00R.
Pioneer Electronic Corporation: *See*—
Mizumoto, Katsuji; Hanada, Toshihide; Kominami, Yasuo; and Yamamura, Masahiro, 4,272,709, Cl. 318-317.000.
Pitman-Moore, Inc.: *See*—
Clausen, Anthony R., 4,271,988, Cl. 222-214.000.
Pitney-Bowes, Inc.: *See*—
Buckley, Franklin J.; and Hubbard, David W., 4,271,786, Cl. 118-661.000.
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, to Henkel Kommanditgesellschaft auf Aktien. Use of water-insoluble aluminosilicates in tanning process for the production of leather. 4,272,242, Cl. 8-94.150.
Plath, Peter: *See*—
Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,272,282, Cl. 71-92.000.
Platteeuw, Pieter J.: *See*—
Kamps, Grietinus R. L.; Moltzer, Jan S. P.; and Platteeuw, Pieter J., 4,272,267, Cl. 55-499.000.
Pliotron Corporation of Canada Limited: *See*—
Van Santen, Gordon L., 4,272,058, Cl. 254-98.000.
Plummer, William T., to Polaroid Corporation. Camera method and apparatus for recording with selected contrast. 4,272,186, Cl. 355-34.000.
Poethen, Hartmut: *See*—
Gatzen, Carl-Jacob; Poethen, Hartmut; and Sion, Heribert, 4,272,548, Cl. 424-312.000.
Poisson, Pierre; and Sturtz, Georges, to Ato Chimie. Alkaline hemiesters and aliphatic diesters of bis-(hydroxy-4-phenyl) alkylphosphonic acids. 4,272,457, Cl. 260-953.000.
Polaroid Corporation: *See*—
Bendoni, Leonard V.; and Smith, Hugh L., 4,272,178, Cl. 354-298.000.
George, Louis J.; and Theobald, Barbara A., 4,272,594, Cl. 430-14.000.
Plummer, William T., 4,272,186, Cl. 355-34.000.
Sachdev, Krishna G.; and Bloom, Stanley M., deceased, 4,272,632, Cl. 564-501.000.
Polazzi, Joseph O.: *See*—
Kotick, Michael P.; Schut, Robert N.; Polazzi, Joseph O.; and Leland, David L., 4,272,541, Cl. 424-260.000.
Pollock, David C. I., to C-I-L Inc. Long vertical shaft bioreactor of simplified design. 4,272,375, Cl. 210-194.000.
Pollock, David C. I., to C-I-L Inc. Method for protecting a bioreactor pressurized head tank against extreme surges of influent waste water. 4,272,379, Cl. 210-621.000.
Pommer, Ernst-Heinrich: *See*—
Ammermann, Eberhard; Thym, Sabine; and Pommer, Ernst-Heinrich, 4,272,551, Cl. 424-324.000.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Tire with asymmetric radial carcass employing blocks to limit carcass swing and carcass expansion. 4,271,889, Cl. 152-353.00R.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Radial carcass tire of large width employing two axially-spaced carcass expansion limiting blocks. 4,271,890, Cl. 152-352.00R.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Radial carcass tire employing carcass expansion limiting block. 4,271,891, Cl. 152-352.00R.
Pool, Joe V., to Phillips Petroleum Company. Control system for a reactor. 4,272,823, Cl. 364-500.000.
Portner, Philip: *See*—
Grewe, Josef; and Portner, Philip, 4,272,564, Cl. 427-163.000.
Posney, Richard V.: *See*—
Frank, Robert G.; Canonaco, Rudy; and Posney, Richard V., 4,272,274, Cl. 65-273.000.
Potter, Michael F.: *See*—
Maxwell, William E.; Jenness, Peter, III; and Potter, Michael F., 4,271,757, Cl. 101-37.000.
Powell, William J., to Stauffer Chemical Company. Processing elemental phosphorus (P_4) containing gas streams. 4,272,496, Cl. 423-210.000.
Powers, John V.: *See*—
Cox, Daniel E.; Kane, Susan M.; and Powers, John V., 4,272,348, Cl. 204-192.00E.
PPG Industries, Inc.: *See*—
Darlington, William B., 4,272,337, Cl. 204-98.000.
Frank, Robert G.; Canonaco, Rudy; and Posney, Richard V., 4,272,274, Cl. 65-273.000.
Reese, Thomas J., 4,272,275, Cl. 65-273.000.
Prazak, Paul R.; and Williams, Theodore L., to Burr-Brown Research Corporation. Self-calibrating digital to analog conversion system and method. 4,272,760, Cl. 340-347.0CC.
Precision Monolithics, Inc.: *See*—
Nishikawa, Yukio, 4,272,656, Cl. 179-170.0NC.
Presearch Incorporated: *See*—
Sandler, Charles S., 4,271,552, Cl. 9-9.000.
Price, John A.: *See*—
Keay, Robert E.; Orwoll, Edward F.; and Price, John A., 4,272,441, Cl. 260-346.730.
Priestman Brothers Limited: *See*—
Robinson, Frank M.; and Taylor, Norman F., 4,271,578, Cl. 29-426.300.
Pritchard, Eric K. Switching transconductance amplifier for inductive loads. 4,272,713, Cl. 318-696.000.
Probost, Werner, to Wurttembergische Metallwarenfabrik. Method for making table knives having a silver-plated handle. 4,272,332, Cl. 204-15.000.
Process Scientific Innovations Limited: *See*—
Walker, Brian; and Merrie, Kenneth, 4,272,318, Cl. 162-382.000.
Procor Limited: *See*—
Tse, Samuel Y. H., 4,272,234, Cl. 425-222.000.
Procter & Gamble Company, The: *See*—
Beharry, Christopher R., 4,272,447, Cl. 260-425.000.
Draper, Ellsworth R., Jr.; and Jones, Kenneth L., 4,272,386, Cl. 252-8.600.
Riemersma, Coenraad E.; and Merz, Theodore P., 4,272,473, Cl. 264-154.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Strassel, Albert, 4,272,585, Cl. 428-413.000.

Produits Findus S.A.: *See*—
Bengtsson, Bengt L.; and Fonskov, Jorgen, 4,272,553, Cl. 426-241.000.
Proffitt, William P.: *See*—
Johnston, Thomas F., Jr.; and Proffitt, William P., 4,272,158, Cl. 350-375.000.
Proper, Johannes; Schuur, Jacob; Monte, George L. A.; and Westerveld, Eduard P., to U.S. Philips Corporation. Method of and apparatus for adjusting an image intensifier chain. 4,272,782, Cl. 358-111.000.
Proskow, Stephen, to Du Pont de Nemours, E. I., and Company. Photosensitive compositions containing thermoplastic ionomeric elastomers useful in flexographic printing plates. 4,272,608, Cl. 430-288.000.
Ptaszek, George W. Child's wheeled riding toy. 4,272,095, Cl. 280-220.000.
Pullen, Virgil L. Power factor meter. 4,272,723, Cl. 324-86.000.
Pun, John Y.: *See*—
Dempster, Philip T.; and Pun, John Y., 4,271,701, Cl. 73-861.420.
PureCycle Corporation: *See*—
Blades, Frederick K., 4,272,679, Cl. 250-372.000.
Putt, J. Ward: *See*—
Ellion, M. Edmond; Putt, J. Ward; and Montich, John J., 4,272,257, Cl. 55-38.000.
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, to Ciba-Geigy Corporation. Composition for and method of selectively controlling weeds in cereals. 4,272,281, Cl. 71-90.000.
Quagliaro, Daniel A.; and Stiesi, Walter E., to United States of America, America. Sterility testing vessel. 4,271,973, Cl. 215-308.000.
Queen's University at Kingston: *See*—
Romero-Sierra, Cesar; and Webb, John C., 4,272,571, Cl. 428-24.000.
Quenneville, Raymond N.: *See*—
Sickler, Kenneth H.; McCarthy, Donald J.; and Quenneville, Raymond N., 4,271,796, Cl. 123-321.000.
Quinard, Yves, to Parfums Rochas. Bottle with prealigned closure. 4,271,974, Cl. 215-331.000.
Quinn, Paul A., Jr.; and Wipke, Walter J., to International Business Machines Corporation. Automatic margin determining apparatus for a scanned sheet of paper. 4,272,204, Cl. 400-342.000.
Rabe, Hansjurgen: *See*—
Balle, Gerhard; Rabe, Hansjurgen; and Vehlewald, Peter, 4,272,619, Cl. 521-169.000.
Racla Co. Limited: *See*—
Carocci, Alberto, 4,271,816, Cl. 126-132.000.
Raczka, Edward, to Sea Gull. Flexible foot support. 4,271,605, Cl. 36-28.000.
Radebold, Reinhart. Conversion of available energy. 4,271,822, Cl. 126-426.000.
Rahe, Jon A., to Hawaiian Motor Company. Housing and cutting line assembly for vegetation cutting apparatus. 4,271,595, Cl. 30-347.000.
Ramseier, Serge: *See*—
Durville, Gerard; Moulin, Michel; Ramseier, Serge; and Zurcher, Erwin, 4,271,568, Cl. 26-9.000.
Rau, Karl: *See*—
Schlick, Horst; Rau, Karl; Wipfler, Alfred; and Lueg-Althoff, Joachim, 4,272,112, Cl. 292-201.000.
Ray, Dan O.: *See*—
Van Kreuningen, Rudolf; and Ray, Dan O., 4,272,796, Cl. 360-128.000.
Ray, Frank: *See*—
Mulee, Dennis L.; Erbach, Arthur R.; and Ray, Frank, 4,271,626, Cl. 43-112.000.
Raychem Corporation: *See*—
Walker, Jack M., 4,272,471, Cl. 264-104.000.
Raytheon Company: *See*—
MacMaster, George H.; and Nichols, Lawrence J., 4,272,740, Cl. 333-127.000.
Razdan, Raj K.; and Ghosh, Anil C., to SISA, Incorporated. 14-Methoxymorphinan-6-one compounds and therapeutic methods of treating pain and drug dependence with them. 4,272,540, Cl. 424-260.000.
Razzano, John S., to General Electric Company. Process for producing high molecular weight diorganopolysiloxanes for use in heat vulcanizable silicone rubber compositions. 4,272,624, Cl. 528-37.000.
RCA Corporation: *See*—
Evans, Robert M., 4,272,743, Cl. 333-176.000.
Fitzgerald, William V., 4,272,777, Cl. 358-10.000.
Fuhrer, Jack S., 4,272,785, Cl. 358-127.000.
Gibson, John J., 4,272,786, Cl. 358-128.500.
Hanak, Joseph J., 4,272,641, Cl. 136-249.000.
Harwood, Leopold A.; and Shanley, Robert L., II, 4,272,778, Cl. 358-23.000.
Knop, Karl, 4,272,197, Cl. 356-434.000.
Malchow, Max E., 4,272,726, Cl. 329-103.000.
Phillips, Kevin J., 4,272,045, Cl. 244-170.000.
Torrington, Leslie A., 4,272,083, Cl. 369-77.000.
Wittlinger, Harold A., 4,272,728, Cl. 330-253.000.
Redford, David A.; and Hanna, Mohsen R., to Alberta Oil Sands Technology and Research Authority. Gaseous and solvent additives for steam injection for thermal recovery of bitumen from tar sands. 4,271,905, Cl. 166-263.000.
Reed, Russell, Jr.: *See*—
Stull, Bertram O.; and Reed, Russell, Jr., 4,272,480, Cl. 422-58.000.
Rees, Herbert; and Schad, Robert D., to Husky Injection Molding Systems Limited. Injection nozzle provided with shut-off means. 4,272,236, Cl. 425-564.000.
Reese, Thomas J., to PPG Industries, Inc. Aligning glass sheets on an outline mold prior to transfer to shaping mold. 4,272,275, Cl. 65-273.000.
Refreshment Machinery Incorporated: *See*—
Neely, Raymond J., 4,271,753, Cl. 99-289.00R.
Regan, Michael T.: *See*—
Webster, Frank G.; Regan, Michael T.; and Rossi, Louis J., 4,272,595, Cl. 430-37.000.
Regazzoni, Francis: *See*—
Guerton, Jean P.; and Regazzoni, Francis, 4,271,949, Cl. 192-98.000.
Regie Nationale des Usines Renault: *See*—
Carduner, Jean-Jacques, 4,271,716, Cl. 74-422.000.
Rehder, Gunther, to Orthoplant Orthopadische Implantate GmbH & Co. Apparatus for producing relief grooves in pan-shaped bones. 4,271,849, Cl. 128-92.00E.
Reid, Thomas J., Jr. Roller skate. 4,272,091, Cl. 280-11.280.
Reidelbach, Willi: *See*—
Schmid, Walter; Breitschwerdt, Werner; Huber, Guntram; and Reidelbach, Willi, 4,272,103, Cl. 280-751.000.
Reisinger, George E., Jr., to Caterpillar Tractor Co. Carburizing tub apparatus and method. 4,272,306, Cl. 148-16.500.
Reitz, Charles F., to Du Pont de Nemours, E. I., and Company. Apparatus with expandable tube bundle. 4,271,900, Cl. 165-162.000.
Reliable Electric Company: *See*—
Burtelson, Frederick W., 4,272,300, Cl. 134-5.000.
Reliable Security Systems, Inc.: *See*—
Logan, Emanuel L., 4,271,691, Cl. 70-422.000.
Rengstl, Johann: *See*—
Bienert, Horst; Igel, Richard; and Rengstl, Johann, 4,272,125, Cl. 296-223.000.
Rexham Corporation: *See*—
Whitaker, William C.; and Canfield, Allen B., 4,271,877, Cl. 141-166.000.
Reynolds, Lydia M.: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.
Reynolds, Maurice Guy: *See*—
Stucker, Wesley G.; and Coles, Richard J., Jr., 4,272,766, Cl. 340-696.000.
Reynolds Metals Company: *See*—
Train, David B., 4,271,964, Cl. 206-633.000.
Weston, David, 4,272,029, Cl. 241-16.000.
Rezanka, Ivan, to Xerox Corporation. Conductive carrier for magnetic brush cleaner. 4,272,184, Cl. 355-15.000.
Rheinisch-Westfalisches Elektrizitatswerk: *See*—
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,272,683, Cl. 250-507.000.
Rhone-Poulenc Industries: *See*—
Aloup, Jean-Claude; Bouchaudon, Jean; Farge, Daniel; and James, Claude, 4,272,534, Cl. 424-248.510.
Semanaz, Daniel; and Cassat, Robert, 4,272,673, Cl. 219-544.000.
Rice, Doris M.: *See*—
Dominguez, Richard J. G.; and Rice, Doris M., 4,272,618, Cl. 521-160.000.
Richard Wolf GmbH: *See*—
Heckele, Helmut, 4,271,829, Cl. 128-6.000.
Richardson-Merrell Inc.: *See*—
Jones, Winton D.; and Miller, Francis P., 4,272,532, Cl. 424-246.000.
Rickards, Michael A., to Rohr Industries, Inc. Anti-broaching sidehull fence for a surface effect ship. 4,271,779, Cl. 114-67.00A.
Ricoh Co., Ltd.: *See*—
Furukawa, Tatsuya, 4,272,771, Cl. 346-75.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,272,598, Cl. 430-72.000.
Ricon Co., Ltd.: *See*—
Satomi, Toyokazu; Koizumi, Yutaka; Nakamura, Isao; Tabata, Yasuhiro; and Kaneko, Tamaki, 4,272,180, Cl. 355-3.0SH.
Rieger, Hansjorg W.: *See*—
Holzwarth, Dietmar H.; and Rieger, Hansjorg W., 4,271,887, Cl. 152-220.000.
Riemersma, Coenraad E.; and Merz, Theodore P., to Procter & Gamble Company, The. Method for embossing and perforating a running ribbon of thermoplastic film on a metallic pattern roll. 4,272,473, Cl. 264-154.000.
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Duren, Gottfried, to Klockner-Humboldt-Deutz AG. Magnetic separator. 4,272,365, Cl. 209-223.00R.
Rifken, Jerome C. Method and apparatus for video recording. 4,272,791, Cl. 360-33.000.
Riggers (Steeplejacks) Limited: *See*—
Brown, George S.; and Hatton, Robert E., 4,271,927, Cl. 182-36.000.
Riggs, Olen L., Jr.: *See*—
Brunsell, Dennis A.; and Riggs, Olen L., Jr., 4,272,343, Cl. 204-130.000.
Riley, William J., Jr., to Harris Corporation. Automatic pretuning of a voltage controlled oscillator in a frequency synthesizer using successive approximation. 4,272,729, Cl. 331-1.00A.
Rilliet, Philippe. Hall with mobile wall and roof elements. 4,271,644, Cl. 52-67.000.
Rines, Robert Harvey: *See*—
Knowles, Albert H., 4,271,788, Cl. 119-3.000.

Riney, John S.; and Chamblin, Thomas F., to United States of America, Army. Clock controlled pulse width modulator. 4,272,690, Cl. 307-265.000.

Rios, Januario R., Jr.: *See—*
Brambley, Michael I.; Myers, Herbert J.; and Rios, Januario R., Jr., 4,271,965, Cl. 206-219.000.

Rittscher, Dieter: *See—*
Baatz, Henning; Rittscher, Dieter; and Fischer, Jurgen, 4,272,683, Cl. 250-507.000.

Riva, Mario; and Toscano, Luciano, to Pierrel S.p.A. Steroids and process for preparing the same. 4,272,446, Cl. 260-397.450.

Robert Bosch GmbH: *See—*
Bianchi, Valerio; Schmidt, Peter-Jurgen; Latsch, Reinhard; and Wahl, Josef, 4,271,804, Cl. 123-440.000.
Bodig, Bernd; Schmied, Helmut; Hohne, Gerd; and Fritz, Adolf, 4,271,812, Cl. 123-609.000.
Knapp, Heinrich; Eisele, Hermann; and Kammerer, Werner, 4,271,794, Cl. 123-454.000.
Links, Heinz; Kopse, Odon; and Eblen, Ewald, 4,271,807, Cl. 123-506.000.

Roberts, George C., to Inca-One Corporation. Quick-change toilet system. 4,271,539, Cl. 4-300.000.

Roberts, Stanley M., to Allen & Hanburys Limited. Novel prostaglandin intermediates. 4,272,629, Cl. 549-11.000.

Robinson, Frank M.; and Taylor, Norman F., to Priestman Brothers Limited. Method and apparatus for removing a slewing ring from a pedestal mounted crane. 4,271,578, Cl. 29-426.300.

Robinson, Leon H., Jr.; Barry, Adelbert; and Speers, Jerry M., to Exxon Production Research Company. Tracked cable guide assembly and method for storing conductor cable inside a drill pipe. 4,271,908, Cl. 166-315.000.

Robinson, Wade C. Clip-on snow chains. 4,271,888, Cl. 152-234.000.

Rockcor, Inc.: *See—*
Galbraith, Lyle D.; Stewart, Hudson; and Congdon, Jon M., 4,272,301, Cl. 134-8.000.

Rockwell-Rimoldi, S.p.A.: *See—*
Pedone, Egidio, 4,271,771, Cl. 112-122.000.

Roerig, Arnold J., to Beloit Corporation. Roll bearing alignment. 4,272,317, Cl. 162-272.000.

Rogers, Thurmond J., Jr. Fishing game. 4,272,075, Cl. 273-1.00E.

Rogers, Victor D.: *See—*
Martinson, Arthur R.; and Rogers, Victor D., 4,272,084, Cl. 277-30.000.

Rohm, Gunter H. Nonloosening drill chuck. 4,272,087, Cl. 279-62.000.

Rohr Industries, Inc.: *See—*
Rickards, Michael A., 4,271,779, Cl. 114-67.00A.

Rohr, Wolfgang: *See—*
Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,272,282, Cl. 71-92.000.

Rollmann, Louis D., to Mobil Oil Corporation. Desulfurization and demetalation of heavy charge stocks. 4,272,357, Cl. 208-89.000.

Rolls-Royce Limited: *See—*
Jones, Bryn; and Slattery, Sidney E., 4,271,675, Cl. 60-737.000.
Northern, James, 4,271,928, Cl. 184-6.400.

Rolls-Royce Motors Limited: *See—*
Stock, Malcolm G., 4,272,115, Cl. 293-155.000.

Rombusch, Konrad: *See—*
Maahs, Gunther; and Rombusch, Konrad, 4,272,633, Cl. 568-364.000.

Romero-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Flower preservation. 4,272,571, Cl. 428-24.000.

Roof, Lewis B., to Phillips Petroleum Company. High temperature sampling system for liquid chromatography. 4,271,703, Cl. 73-863.110.

Rookard, Johnnie P., Jr. Multi-purpose survival canteen. 4,272,768, Cl. 343-18.00C.

Rooks, Charles W.: *See—*
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,399, Cl. 252-373.000.
Davis, George D.; Hill, James C.; McMinn, Talmage D.; and Rooks, Charles W., 4,272,555, Cl. 423-415.00A.

Roper Industries, Inc. (Ohio): *See—*
Kabele, Walter A., 4,272,224, Cl. 417-360.000.

Rose, Donald K., to Intel Magnetics, Inc. Multiplexed single wall domain generators. 4,272,817, Cl. 365-12.000.

Ross, Harley H.: *See—*
Strain, James E.; and Ross, Harley H., 4,272,247, Cl. 23-230.00R.

Rossi, Alberto: *See—*
Haas, Georges; and Rossi, Alberto, 4,272,547, Cl. 424-311.000.

Rossi, Louis J.: *See—*
Webster, Frank G.; Regan, Michael T.; and Rossi, Louis J., 4,272,595, Cl. 430-37.000.

Rossi, Robert K.: *See—*
Payne, Roger E.; Rossi, Robert K.; and Knizely, James B., 4,272,309, Cl. 156-117.000.

Rossow, Harold E.: *See—*
Lane, George A.; and Rossow, Harold E., 4,272,390, Cl. 252-70.000.
Lane, George A.; and Rossow, Harold E., 4,272,391, Cl. 252-70.000.
Lane, George A.; and Rossow, Harold E., 4,272,392, Cl. 252-70.000.

Rothhaas, Friedrich; and Pichler, Gunther, to Sistemco N.V. Fire resistant cabinet with protective void in gypsum filling. 4,272,137, Cl. 312-214.000.

Rothman, Laura B.; Totta, Paul A.; and White, James F., to International Business Machines Corporation. Hybrid process for SBD metallurgies. 4,272,561, Cl. 427-84.000.

Rotta Research Laboratorium S.p.A.: *See—*
Makovec, Francesco; Senin, Paolo; and Rovati, Luigi, 4,272,538, Cl. 424-250.000.

Roussel Uclaf: *See—*
Teutsch, Jean G.; and Philibert, Daniel, 4,272,530, Cl. 424-238.000.

Rovati, Luigi: *See—*
Makovec, Francesco; Senin, Paolo; and Rovati, Luigi, 4,272,538, Cl. 424-250.000.

Rowe, David. Batter actuated baseball pitching machine. 4,271,813, Cl. 124-7.000.

Rowe, Frederick G., to Cameron Iron Works, Inc. Fire safe valve. 4,271,857, Cl. 137-73.000.

Rowsey, Luther B., Jr. Portable planetarium. 4,271,604, Cl. 434-289.000.

Roy, Kenneth L.: *See—*
Fugate, Philip E.; and Roy, Kenneth L., 4,272,748, Cl. 335-271.000.

Royer, Daniel: *See—*
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,272,676, Cl. 250-221.000.

Royer, Michel: *See—*
Bernard, Andre; Disdier, Andre; and Royer, Michel, 4,272,448, Cl. 260-448.00R.

Rudy, Marion F., to Bogert, Robert C. Shoes with studded soles. 4,271,606, Cl. 36-29.000.

Ruggiano, Harriet M. Infant carrier. 4,271,998, Cl. 224-160.000.

Rusch, Willard V. T.: *See—*
Young, Frederick A.; and Rusch, Willard V. T., 4,272,769, Cl. 343-781.00P.

Ruscheinsky, Emil: *See—*
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, 4,272,242, Cl. 8-94.150.

Russell, Floyd C.: *See—*
Cason, Robert W.; Holland, Orvis L.; Russell, Floyd C.; Bass, Malley R.; and Frier, James L., 4,272,499, Cl. 423-242.000.

Russell, Robert J., to Mail-Ex Corporation. Envelope processing machine. 4,271,656, Cl. 53-381.00R.

Rustioni, Massimo: *See—*
Balducci, Luigi; and Rustioni, Massimo, 4,272,296, Cl. 106-288.00B.

Ruth, Harvey L.; and Phelan, Michael B., to ACF Industries, Incorporated. Tamper resistant idle adjustment screw. 4,272,458, Cl. 261-23.00A.

Ruthner Industrieanlagen-Aktiengesellschaft: *See—*
Lutz, Willibald; and Mooss, Heinz, 4,272,489, Cl. 422-209.000.

Ryczek, William G., to Allis-Chalmers Corporation. Concave safety door with sealing and latching features. 4,271,850, Cl. 130-27.0JT.

Ryffel, Henry, to Compudrive Corporation. Planetary transmission. 4,271,726, Cl. 74-805.000.

S&C Electric Company: *See—*
Biller, Bruce A.; and Jackson, Hiram S., Jr., 4,272,751, Cl. 337-231.000.

S.K.F. Compagnie d'Applications Mechaniades: *See—*
Guerton, Jean P.; and Regazzoni, Francis, 4,271,949, Cl. 192-98.000.

Saab-Scania AB: *See—*
Warnstam, Lars-Ake; Jonsson, Rune; and Ludvigsson, Georg, 4,272,783, Cl. 358-126.000.

Sabel, Erik A. Wear resistant slab. 4,272,211, Cl. 404-21.000.

Sachdev, Krishna G.; and Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix), to Polaroid Corporation. Novel silver complexing agents. 4,272,632, Cl. 564-501.000.

Sahley, Lloyd W., to Syndrill Products Joint Venture. Locking device for hard metal inserts. 4,271,917, Cl. 175-410.000.

Saigne, Gerard, to Paumellerie Electrique. Closing device for a tank for a hydrocarbon or like liquid. 4,271,977, Cl. 220-371.000.

Saito, Takahiko; and Sato, Masaru, to Sony Corporation. Channel programing apparatus. 4,272,784, Cl. 358-127.000.

Sajima, Yasuo: *See—*
Jizaimaru, Tanzo; Tanaka, Hideya; and Sajima, Yasuo, 4,272,352, Cl. 204-279.000.

Sakai, Kiyoshi: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,272,598, Cl. 430-72.000.

Sakashita, Masao; and Matsuura, Yoshiaki, to Kabushiki Kaisha Kawai Gakki Seisakusho. Sound generator for producing ANGKLONG like sound. 4,271,742, Cl. 84-1.260.

Sakuranaka, Toru: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,271,805, Cl. 123-459.000.
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Samokhin, Andrei V.; Bekker, Boris G.; and Davydov, Alexandr N. Electrochromic indicator. 4,272,163, Cl. 350-357.000.

Sanada, Masakatsu: *See—*
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.

Sanagi, Mitsuru: *See—*
Katsumata, Yutaka; Sanagi, Mitsuru; and Tanaka, Hideo, 4,272,819, Cl. 364-200.000.

Sandler, Charles S., to Presearch Incorporated. Torpedo floatation device. 4,271,552, Cl. 9-9.000.

Sandoz Ltd.: *See—*
Gadient, Fulvio; and Suess, Rudolf, 4,272,533, Cl. 424-248.400.

Schlick, Bernhard, 4,272,244, Cl. 8-529.000.
Sandvik Aktiebolag: *See*—
Levefelt, Bert G., 4,272,134, Cl. 308-8.200.
Sandy, Inc.: *See*—
Schmiedeler, Edward A., 4,271,766, Cl. 108-111.000.
Sanko Chemical Co., Ltd.: *See*—
Imamura, Juichi, 4,272,634, Cl. 568-432.000.
Sano, Takezo; Shimomura, Takatoshi; Sasaki, Masao; and Murase, Ichiki, to Sumitomo Chemical Company, Limited. Semipermeable membrane. 4,272,378, Cl. 210-500.200.
Santiago, Edgardo, to Owens-Illinois, Inc. Glass article having abrasion resistant and label receptive coating and method of producing same. 4,272,587, Cl. 428-432.000.
Sarre, Olga: *See*—
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,272,439, Cl. 260-245.20R.
Sasaki, Masao: *See*—
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Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, to Ricoh Co., Ltd. Electrophotographic material containing disazo compounds. 4,272,598, Cl. 430-72.000.
Sato, Keiji: *See*—
Tokura, Hiroshi; Sato, Keiji; Tomono, Makoto; Terada, Sadatugu; and Arai, Hideaki, 4,272,601, Cl. 430-108.000.
Sato, Masaru: *See*—
Saito, Takahiko; and Sato, Masaru, 4,272,784, Cl. 358-127.000.
Sato, Shosuke: *See*—
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; Sato, Shosuke; and Matsuzawa, Hideshi, 4,272,674, Cl. 235-69.000.
Sato, Toshio: *See*—
Yoshida, Tomio; Nakata, Yoshinobu; Harigae, Shunji; and Sato, Toshio, 4,272,651, Cl. 369-112.000.
Satoh, Katsuhiko: *See*—
Ueda, Makoto; Torisawa, Akira; Satoh, Katsuhiko; Shida, Masaharu; Mandai, Masaaki; and Asano, Kazuhiro, 4,272,837, Cl. 368-80.000.
Satomi, Toyokazu; Koizumi, Yutaka; Nakamura, Isao; Tabata, Yasuhiro; and Kaneko, Tamaki, to Ricon Co., Ltd. Electrostatic copying machine. 4,272,180, Cl. 355-3.0SH.
Satti, John A., to United States of America, Energy. Method of constructing a superconducting magnet. 4,271,585, Cl. 29-599.000.
Sawada, Kazuo: *See*—
Kotani, Yasutoyo; Sawada, Kazuo; Nagai, Shuzo; Ogino, Takao; and Watabe, Seiji, 4,272,351, Cl. 204-202.000.
Sawyer, Theodore E.: *See*—
McKeen, Robert S.; Keefer, Kenneth S.; and Sawyer, Theodore E., 4,272,141, Cl. 339-18.00R.
Schaaf, Kurt H.; and Horn, Herman, to Diamond Shamrock Corporation. Hydrolysis of 5-(beta-methylmercaptoethyl)-hydantoin. 4,272,631, Cl. 562-559.000.
Schachner, Dianne; and Zimmerman, Barbara, to Body Design, Incorporated. Combination wall mounted dance barre and exercise rod. 4,272,070, Cl. 272-62.000.
Schad, Robert D.: *See*—
Rees, Herbert; and Schad, Robert D., 4,272,236, Cl. 425-564.000.
Schafer, Otmar U. Heating installation. 4,271,679, Cl. 62-238.400.
Schafer, Richard A., to Deere & Company. Draft sensing device including load pin with free end. 4,271,910, Cl. 172-7.000.
Schatzler, Walter; and Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Vehicle body member with an opening closable by a cover. 4,272,122, Cl. 296-221.000.
Schatzler, Walter; and Kohlpaintner, Georg, to Webasto-Werk W. Baier GmbH & Co. Device for height adjustment of a rigid sliding cover. 4,272,124, Cl. 296-222.000.
Schegerin, Robert J. F. Ski apparatus. 4,272,578, Cl. 428-113.000.
Scheibel, Edward G.: *See*—
Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,272,362, Cl. 208-254.00H.
Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Metallurgical vessel. 4,272,286, Cl. 75-51.000.
Schenck, Jay R.: *See*—
Kim, Yung D.; Tomita, Joseph T.; and Schenck, Jay R., 4,272,504, Cl. 424-1.000.
Schepers, Herman A. J., to Stamicarbon, B.V. Process for preparing a polymer mixture. 4,272,431, Cl. 260-42.460.
Schering, Aktiengesellschaft: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,272,543, Cl. 424-273.00R.
Schering Corporation: *See*—
Blythin, David J., 4,272,535, Cl. 424-248.540.
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,272,439, Cl. 260-245.20R.
Neustadt, Bernard R.; and Gold, Elijah H., 4,272,550, Cl. 424-324.000.
Wright, John J., 4,272,525, Cl. 424-177.000.
Schertz, William W., to United States of America, Energy. Long-term ice storage for cooling applications. 4,271,681, Cl. 62-260.000.
Scheuermann, Horst; and Schneider, Dieter, to BASF Aktiengesellschaft. (3-Nitro-4-methyl)-phenyl chloroformate and its preparation. 4,272,450, Cl. 260-463.000.
Schick, Karl G., to Fiatron Systems, Inc. Solution handling apparatus and method. 4,272,483, Cl. 422-67.000.
Schildkraut, Alan L.: *See*—
Brush, Robert W.; Werth, Dee A.; and Schildkraut, Alan L., 4,272,144, Cl. 339-89.00R.
Schleicher & Schuell, Inc.: *See*—
Kremer, Richard D.; and Siebengartner, Michael J., 4,272,381, Cl. 210-658.000.
Schlick, Bernhard, to Sandoz Ltd. Disperse dyeing of polyvinyl chloride-acetelized polyvinyl alcohol fibers. 4,272,244, Cl. 8-529.000.
Schlick, Horst; Rau, Karl; Wipfler, Alfred; and Lueg-Althoff, Joachim, to VDO Adolf Schindling AG. Electric door lock for motor vehicles. 4,272,112, Cl. 292-201.000.
Schmid, Walter; Breitschwerdt, Werner; Huber, Guntram; and Reidelbach, Willi, to Daimler-Benz Aktiengesellschaft. Lateral protection of motor vehicles. 4,272,103, Cl. 280-751.000.
Schmidt, Carson T.; Ward, William P.; and Young, Rocky M. Y., to NCR Corporation. Reconfigurable register and logic circuitry device for selective connection to external buses. 4,272,829, Cl. 364-900.000.
Schmidt, Erick, to General Systems Research Ltd. Reusable picture frame. 4,271,619, Cl. 40-154.000.
Schmidt, Hans, to Matsushita Electric Corporation of America. Drive mechanism. 4,271,714, Cl. 74-202.000.
Schmidt, Peter-Jurgen: *See*—
Bianchi, Valerio; Schmidt, Peter-Jurgen; Latsch, Reinhard; and Wahl, Josef, 4,271,804, Cl. 123-440.000.
Schmied, Helmut: *See*—
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Schmiedeler, Edward A., to Sandy, Inc. Collapsible display shelf. 4,271,766, Cl. 108-111.000.
Schmitt, Frederick L.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,271,853, Cl. 131-276.000.
Schmuckler, Gabriella: *See*—
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Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., to Suntech, Inc. Process to upgrade shale oil. 4,272,362, Cl. 208-254.00H.
Schneider, Dieter: *See*—
Scheuermann, Horst; and Schneider, Dieter, 4,272,450, Cl. 260-463.000.
Schneider, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. System for transmitting service communications. 4,272,843, Cl. 370-24.000.
Scholten, Heinz: *See*—
Capelle, Anton; and Scholten, Heinz, 4,272,566, Cl. 427-208.200.
Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Air cooling ring for plastic film with independent lubricating air for film guide surface. 4,272,231, Cl. 425-72.00R.
Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Filter plate shifting apparatus. 4,272,376, Cl. 210-230.000.
Schroeder, Marvin C.; and Stastny, Edwin O., to Data Card Corporation. Ribbon cartridge with broken unidirectional friction drive and self cleaning gears. 4,272,202, Cl. 400-208.000.
Schroeder, Otto E.; Wohlman, Alan; and Topor, Michael G., to Frito-Lay, Inc. Process for preparing blister-inhibited potato chips. 4,272,554, Cl. 426-321.000.
Schuegraf, Eberhard, to Siemens Aktiengesellschaft. Rectangular waveguide elbow bent across the broad side of the waveguide with corner flattening and a transverse bar. 4,272,744, Cl. 333-249.000.
Schuler, Martin, to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer. Electrosurgical apparatus. 4,271,837, Cl. 128-303.140.
Schuller, William M.: *See*—
Howell, Dan M.; Kolpek, Robert A.; and Schuller, William M., 4,272,813, Cl. 364-900.000.
Schultheiss, Udo, to Gebruder Junghans GmbH. Suspension device for the clockwork of a clock. 4,272,842, Cl. 368-316.000.
Schultze, Lawrence E.; Bauer, Donald J.; and Morimoto, Michael T., to United States of America, Interior. Ferric leaching of uranium values from lignite. 4,272,491, Cl. 423-20.000.
Schulz, Johann G. D.; and Cobler, John A., to Gulf Research & Development Company. Stable coal-in-oil suspensions and process for preparing same. 4,272,253, Cl. 44-51.000.
Schumann, Klaus: *See*—
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Schuur, Jacob: *See*—
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Schwarzberg, Moshe, to Syva Company. Purification of reagents by disulfide immobilization. 4,272,506, Cl. 424-8.000.
Schwen, Roland: *See*—
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Schwob, Alain L. C.; Busschaert, Bruno J.; and Ivorra, Claude A. M., to Phenol Engineering S.a.r.l. Solar energy collector. 4,271,825, Cl. 126-450.000.
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Scott, Brian A.: *See*—
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Scott, Keith; and Wright, Allen R., to National Research Development Corporation. Moving bed electrolysis. 4,272,333, Cl. 204-23.000.

Sea Gull: *See*—
Raczka, Edward, 4,271,605, Cl. 36-28.000.

Seachman, Ned J., to Xerox Corporation. Optical beam-splitting arrangements on object side of a lens. 4,272,684, Cl. 250-578.000.

Seanor, Donald A., to Xerox Corporation. Metal-filled elastomer fuser member. 4,272,179, Cl. 355-3.0FU.

Sears, John T.: *See*—
Stiller, Alfred H.; Sears, John T.; and Hammack, Richard W., 4,272,356, Cl. 208-8.0LE.

Seaton, William W., to Combustion Engineering, Inc. Flex rod assembly for a stopper valve in a bottom pour ladle. 4,271,994, Cl. 222-602.000.

Security Plastics, Inc.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,271,990, Cl. 222-321.000.
Kutik, Louis F.; and Cecil, Howard E., 4,272,228, Cl. 417-460.000.

Seely, John H.: *See*—
Von Esch, Anne M.; Thomas, Alford M.; Fairgrieve, John S.; and Seely, John H., 4,272,528, Cl. 424-211.000.

Sefcik, Robert. Fork lift attachment system. 4,272,217, Cl. 414-420.000.

Sefton, Verner B.; and Masters, Ian M., to Sherritt Gordon Mines Limited. Hydrometallurgical process for the treatment of ores. 4,272,490, Cl. 423-18.000.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; and Shinozaki, Nobuo, 4,272,839, Cl. 368-107.000.

Seilly, Alec H.; and Mowbray, Dorian F., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,272,027, Cl. 239-585.000.

Seitel, Norbert J.: *See*—
McDonald, Walter; and Seitel, Norbert J., 4,271,579, Cl. 29-430.000.

Seitz, William R.; and Leung, Chun K., to Bendix Corporation, The. Alternate closed loop control system for an air-fuel ratio controller. 4,271,798, Cl. 123-419.000.

Seki, Kunimichi, to Hiroshi Takeuchi. Cooling apparatus for viscous liquids. 4,271,682, Cl. 62-354.000.

Sekiguchi, Masuo: *See*—
Takao, Syosuke; Kikuchi, Gunpei; Sekiguchi, Masuo; and Kawauchi, Shinji, 4,271,725, Cl. 74-730.000.

Semanaz, Daniel; and Cassat, Robert, to Rhone-Poulenc Industries. Heating element. 4,272,673, Cl. 219-544.000.

Sengua, Saturnino. Work station. 4,272,136, Cl. 312-196.000.

Sengupta, Uday K.: *See*—
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Senin, Paolo: *See*—
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Sferle, Mihai. Body building apparatus. 4,272,074, Cl. 272-120.000.

Shackelton, Clifford W.: *See*—
MacKenzie, George W.; Shackelton, Clifford W.; and Yankielun, Norbert E., 4,272,655, Cl. 179-159.000.

Shafer, David R., to Perkin-Elmer Corporation, The. Unit magnification relay systems. 4,272,152, Cl. 350-27.000.

Shaffer, Walter M., to Caterpillar Tractor Co. Power train with an auxiliary creeper drive system. 4,271,723, Cl. 74-720.000.

Shaji, Shigeo: *See*—
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Shankoff, Theodore A.: *See*—
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Shanley, Robert L., II: *See*—
Harwood, Leopold A.; and Shanley, Robert L., II, 4,272,778, Cl. 358-23.000.

Shapiro, Alan R., to Typalogics. Optical measuring system. 4,272,190, Cl. 356-124.000.

Shatila, Mounir A.; and Von Der Lieth, William H., to AMPCO Foods, Inc. Method for forming potato dough from dry potato agglomerates and water. 4,272,556, Cl. 426-453.000.

Shatto, Homer M. Percussion instruments. 4,271,745, Cl. 84-402.000.

Shaw, Harold G., Sr.: *See*—
Bauer, Andrew J., Jr.; and Doering, John N., 4,272,212, Cl. 404-72.000.

Shaw, Michael J.; and Thiessen, Robert J., to Allied Paper Incorporated. Water and solvent resistant coated paper and method for making the same. 4,272,569, Cl. 427-336.000.

Sheibley, Dean W.: *See*—
Hsu, Li-Chen; Sheibley, Dean W.; and Philipp, Warren H., 4,272,470, Cl. 264-104.000.

Shenoi, Kishan: *See*—
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Shepherd, Robert G., to American Cyanamid Company. Esters of 4-(monoalkylamino)benzoic hydroxyalkanoic acids. 4,272,546, Cl. 424-310.000.

Sherman, Larry; and Niedospial, John J., to Eastman Kodak Company. Light lock for roll dispensing container. 4,272,035, Cl. 242-71.100.

Sherritt Gordon Mines Limited: *See*—
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Shibaoka, Haruo; and Ogawa, Junkichi, to Fuji Photo Film Co., Ltd. Color photographic process. 4,272,613, Cl. 430-364.000.

Shida, Masaharu: *See*—
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Shiel, Leslie E.: *See*—
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Shields, Walter. Apparatus for continuously inverting sheaths and placing the sheaths onto articles. 4,271,587, Cl. 29-809.000.

Shifflett, Wiley M. Mud degasser method and apparatus. 4,272,258, Cl. 55-52.000.

Shimada, Isao: *See*—
Hukagawa, Hitoshi; Shimada, Isao; Naruo, Masayuki; and Endo, Terumi, 4,272,671, Cl. 219-505.000.

Shimizu, Takeyuki: *See*—
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Shimizu, Toshihide: *See*—
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Shimose, Masahiro: *See*—
Tsuda, Takeshi; Kubota, Michio; Takagi, Kazuhiro; Shimose, Masahiro; Imamura, Yasuo; and Kato, Kazunori, 4,271,571, Cl. 29-25.180.

Shin-Etsu Chemical Co., Ltd.: *See*—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,272,464, Cl. 264-22.000.
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Kitamura, Hajime; Shimizu, Toshihide; and Kaneko, Ichiro, 4,272,622, Cl. 526-62.000.

Shinohara, Hiroshi: *See*—
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Shinozaki, Nobuo: *See*—
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Shiozaki, Tetsuya: *See*—
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Shirai, Kazunari; Tanaka, Izumi; Tanaka, Shinpei; and Nishimoto, Keiji, to Fujitsu Limited. Process for producing a semiconductor device. 4,271,582, Cl. 29-571.000.

Shiraishi, Norio: *See*—
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Shivers, David E.: *See*—
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Shivers, Deborah: *See*—
Shivers, Norman E., Jr.; Shivers, David E.; and Shivers, Paul N., 4,271,879, Cl. 144-2.00N.

Shivers, Norman E., Jr.; Shivers, David E.; and Shivers, Paul N., to Shivers, Deborah. Hydraulic stump cutting and digging apparatus. 4,271,879, Cl. 144-2.00N.

Shivers, Paul N.: *See*—
Shivers, Norman E., Jr.; Shivers, David E.; and Shivers, Paul N., 4,271,879, Cl. 144-2.00N.

Shoemaker, Stephen P., Jr. Coin projecting amusement device. 4,272,082, Cl. 273-356.000.

Shoji, Kunio: *See*—
Shoji, Sanae; and Shoji, Shigeo, 4,272,210, Cl. 404-1.000.

Shoji, Michio: *See*—
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Shoji, Sanae; and Shoji, Shigeo, 4,272,210, Cl. 404-1.000.

Shoup, Robert E. Method and apparatus for making fishing lure wings. 4,271,995, Cl. 223-47.000.

Shtern, Maria A.; Levit, Nelli I.; Bondarenko, Alla V.; and Kaschentseva, Alexandra K. Heat-reflective enamel. 4,272,291, Cl. 106-14.050.

Sickel, Liesbet: *See*—
Veit, Ivar; Sickel, Liesbet; and Gatzsch, Konstantin, 4,272,647, Cl. 179-1.0AL.

Sickler, Kenneth H.; McCarthy, Donald J.; and Quenneville, Raymond N., to Jacobs Manufacturing Company, The. Pressure relief system for engine brake. 4,271,796, Cl. 123-321.000.

Sid W. Richardson Foundation: *See*—
Moore, Howard H., Jr., 4,271,902, Cl. 166-117.500.

Siebengartner, Michael J.: *See*—
Kremer, Richard D.; and Siebengartner, Michael J., 4,272,381, Cl. 210-658.000.

Siegel, Sanford A.; Yoshimine, Masao; and Kao, Che-I, to Dow Chemical Company, The. Production of alkali metal phenates. 4,272,635, Cl. 568-776.000.

Siemens Aktiengesellschaft: *See*—
Bachel, Ernst, 4,272,154, Cl. 350-96.220.
Meusburger, Guenther, 4,272,693, Cl. 307-304.000.

Schuegraf, Eberhard, 4,272,744, Cl. 333-249.000.
Sifra: *See—*
Vilbeuf, Jean, 4,272,117, Cl. 296-65.00R.
Sigma Instruments, Inc.: *See—*
Beling, Thomas E.; and Bric, Leopold, 4,272,712, Cl. 318-696.000.
Silbernagel, Bernard G.; Mohan, Raam R.; and Singhal, Gopal H., to Exxon Research & Engineering Co. Regeneration of spent hydrodesulfurization catalysts employing presulfiding treatment and heteropoly acids. 4,272,400, Cl. 252-413.000.
Simes S.p.A.: *See—*
Casagrande, Cesare; and Ferrari, Giorgio, 4,272,529, Cl. 424-230.000.
Simon, Ernst-Ulrich; and Ullrich, Horst, to VDO Adolf Schindling AG. Connector for a ring circuit of a bus-system. 4,272,146, Cl. 339-99.00R.
Simpkins, David E.; and Taylor, John B. O., to Macarthys Pharmaceuticals Limited. Derivatives of chloral. 4,272,526, Cl. 424-180.000.
Simpson, David A.: *See—*
Breslow, David S.; and Simpson, David A., 4,272,610, Cl. 430-302.000.
Simpson, Kenneth, to C & K Components, Inc. Toggle switch with shaped wire spring contact. 4,272,662, Cl. 200-275.000.
Singer Company, The: *See—*
Kornatowski, Boleslaw, 4,272,645, Cl. 174-65.00G.
Singhal, Gopal H.: *See—*
Mohan, Raam R.; and Singhal, Gopal H., 4,272,401, Cl. 252-413.000.
Silbernagel, Bernard G.; Mohan, Raam R.; and Singhal, Gopal H., 4,272,400, Cl. 252-413.000.
Sion, Heribert: *See—*
Gatzen, Carl-Jacob; Poethen, Hartmut; and Sion, Heribert, 4,272,548, Cl. 424-312.000.
SISA, Incorporated: *See—*
Razdan, Raj K.; and Ghosh, Anil C., 4,272,540, Cl. 424-260.000.
Sistemco N.V.: *See—*
Rothhaas, Friedrich; and Pichler, Gunther, 4,272,137, Cl. 312-214.000.
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, to Carlo Erba Strumentazione S.p.A. Apparatus for feeding carrier gas to on-column injectors. 4,271,695, Cl. 73-23.100.
SK "Pamukotex": *See—*
Dimitrov, Milko D., 4,272,034, Cl. 242-35.50R.
Skala, Karel, to BBC Brown, Boveri & Company, Limited. Steam turbine plant. 4,271,673, Cl. 60-660.000.
Skarky, Loren D., to Magnetic Peripherals Inc. Disc memory drive with improved cartridge handling. 4,272,794, Cl. 360-97.000.
SKF (UK) Limited: *See—*
Hamblin, Ronald F.; and Westgate, Harry H., 4,272,135, Cl. 308-20.000.
Slagle, Grady M., Jr.; and Thomas, Donald O., Jr., to Coalinga Corporation. Retrievable annulus and tubing flow control valves. 4,271,903, Cl. 166-129.000.
Slater, Saul I., to Hov-Air-Ship, Inc.,. Airship and associated apparatus and method for anchoring same. 4,272,042, Cl. 244-115.000.
Slattery, Sidney E.: *See—*
Jones, Bryn; and Slattery, Sidney E., 4,271,675, Cl. 60-737.000.
Slaughter, Raymond J., to BICC Limited. Optical cables. 4,272,155, Cl. 350-96.230.
Slocumb, Robert C., to Conwed Corporation. Method for reducing the aging period of polyethylene foams. 4,272,468, Cl. 264-53.000.
Smeets, Gerard G. F. Two step pressure intensifier system. 4,271,671, Cl. 60-578.000.
Smiley, Parker C.: *See—*
O'Neill, Cormac G.; and Smiley, Parker C., 4,271,989, Cl. 222-282.000.
Smith, David E.: *See—*
Brooks, Kenneth; Shiel, Leslie E.; and Smith, David E., 4,272,297, Cl. 106-306.000.
Smith, David S., to Technicon Instruments Corporation. Competitive binding analysis by fluorescence. 4,272,505, Cl. 424-8.000.
Smith, Donald C., to Zapata Industries, Inc. Automatic feeding hopper employing an anti-jamming mechanism. 4,271,953, Cl. 198-347.000.
Smith, Franklin G.: *See—*
Moshofsky, Jerome F., 4,272,002, Cl. 227-19.000.
Smith, Hugh L.: *See—*
Bendoni, Leonard V.; and Smith, Hugh L., 4,272,178, Cl. 354-298.000.
Smith, Kendall O.; and Gehle, Warren D. Magnetic attraction transfer process for use in solid phase radioimmunoassays and in other assay methods. 4,272,510, Cl. 427-47.000.
Smith Kline Instruments, Inc.: *See—*
Specht, Donald F.; and Goldberg, Paul R., 4,271,842, Cl. 128-661.000.
Smith, Lawrence M.: *See—*
Moshofsky, Jerome F., 4,272,002, Cl. 227-19.000.
Smith, Leonard: *See—*
Zapf, Richard L., 4,272,142, Cl. 339-29.00B.
Smith, Paul; and Cassidy, Frederick, to Beecham Group Limited. Process for preparing active compounds. 4,272,445, Cl. 260-397.400.
Smith, Robert L.: *See—*
Woltersdorf, Otto W., Jr.; deSolms, S. Jane; and Smith, Robert L., 4,272,537, Cl. 424-249.000.
Smith, Samuel C. Wire cutter. 4,271,593, Cl. 30-233.000.
Smith, Stuart B., to Integrated Insulation Systems, Inc. Method and apparatus for forming expanded foam articles. 4,272,469, Cl. 264-53.000.
Smith, Thomas M. Radiant heating. 4,272,237, Cl. 431-328.000.
Smith, Thomas M. Infra-red heating and burners. 4,272,238, Cl. 431-328.000.
Smith, William A.: *See—*
Kintgen, Dale I.; Mylrea, William J.; and Smith, William A., 4,271,755, Cl. 100-52.000.
SmithKline Corporation: *See—*
DeMarinis, Robert M., 4,272,531, Cl. 424-246.000.
Duggan, Angelina J.; and Webb, Robert L., 4,272,440, Cl. 260-343.600.
Smithline, Leonard M.; and Wolga, George J., to Lansing Research Corporation. Temperature compensation of tunable acoustic optical filters. 4,272,825, Cl. 364-571.000.
Smolka, Heinz G.: *See—*
Plapper, Juergen; Schumann, Klaus; Schwuger, Milan J.; Smolka, Heinz G.; Arndt, Emanuel; Ruscheinsky, Emil; and Jansen, Herman, 4,272,242, Cl. 8-94.150.
Snape, Christopher J.; and Burton, Philip J., to Charles Winn (Valves) Limited. Butterfly valve having temperature responsive sealing means. 4,271,858, Cl. 137-74.000.
Snoek, Govert J., to Inter Ocean N.V. Check valve and method of manufacturing said check valve. 4,271,862, Cl. 137-511.000.
Snyder, Fred P., to Essex Cryogenics of Missouri, Inc. Apparatus for pressure swing generation of oxygen. 4,272,265, Cl. 55-389.000.
Societa Italiana Resine S.I.R. S.p.A.: *See—*
Passalenti, Beppino; Giuliani, Gino; and Fiorani, Osvaldo, 4,272,416, Cl. 260-18.0EP.
Societa Italiana Telecomunicazion Siemens SpA: *See—*
Fiumani, Francesco, 4,272,845, Cl. 375-20.000.
Societa Italo-Britannica-L. Manetti-H. Roberts Co.: *See—*
Caldini, Oreste; and Meucci, Sandro, 4,272,516, Cl. 424-70.000.
Societe Anonyme Automobiles Citroen: *See—*
Barthelemy, Andre J., 4,271,920, Cl. 180-55.000.
Chambon, Andre F., 4,272,101, Cl. 280-692.000.
Etienne, Michel, 4,272,716, Cl. 320-14.000.
Societe Anonyme Parinter: *See—*
Berend, Francis T., 4,272,568, Cl. 427-261.000.
Societe Chimiques des Charbonnages SA: *See—*
Meyer, Nicolas; and Foulon, Raymond, 4,272,403, Cl. 252-428.000.
Societe des Aciers Fins de l'Est: *See—*
Becus, Robert, 4,271,896, Cl. 164-449.000.
Societe Lignes Telegraphiques et Telephoniques: *See—*
Hulin, Jean P.; and de Vecchis, Michel, 4,272,472, Cl. 264-146.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Lesgourgues, Jacques, 4,272,290, Cl. 75-212.000.
Sokoly, Theodore O.; and Niedzialkowski, John, to Electric Power Research Institute. Metal oxide varistor and method. 4,272,411, Cl. 252-516.000.
Solai Vignola di Faviani Orlando ec Societa: *See—*
Abate, Giorgio, 4,272,230, Cl. 425-64.000.
Solender, Peter E.: *See—*
Hoskinson, William R.; Solender, Peter E.; and Machanian, William V., 4,271,741, Cl. 84-1.030.
Solid Safety, Inc.: *See—*
Altman, Donna G., 4,272,252, Cl. 44-40.000.
Somerville, William M., to Northern Engineering Industries Limited. Mooring winch system. 4,272,706, Cl. 318-6.000.
Song, Jae M.; and Ligon, Samuel B. Tetherable game ball. 4,272,076, Cl. 273-58.00C.
Sony Corporation: *See—*
Osato, Mamoru; and Koizumi, Hiroshi, 4,272,653, Cl. 179-115.00R.
Saito, Takahiko; and Sato, Masaru, 4,272,784, Cl. 358-127.000.
Sorenson, Paul D.: *See—*
Lattin, Gary A.; and Sorenson, Paul D., 4,271,840, Cl. 128-1.00R.
Sorrells, Paul J., Jr., to MM Systems Corporation. Batten and paneling system. 4,271,651, Cl. 52-460.000.
Southern Refractories, Inc.: *See—*
Hickson, Richard W., 4,272,018, Cl. 239-8.000.
Spaziante, Placido M.: *See—*
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,272,354, Cl. 204-290.00R.
Specht, Donald F.; and Goldberg, Paul R., to Smith Kline Instruments, Inc. Apparatus and method for providing multiple ultrasonic sector image displays. 4,271,842, Cl. 128-661.000.
Specktor, Gerald A. Apparatus for pivotally interconnecting. 4,271,692, Cl. 72-447.000.
Spectra-Physics, Inc.: *See—*
Jarrett, Steven M.; and Du Bose, Harold D., 4,272,734, Cl. 331-94.50S.
Speers, Jerry M.: *See—*
Robinson, Leon H., Jr.; Barry, Adelbert; and Speers, Jerry M., 4,271,908, Cl. 166-315.000.
Spence, Wayman R., to Spenco Medical Corporation. High absorption body powder. 4,272,514, Cl. 424-69.000.
Spenco Medical Corporation: *See—*
Spence, Wayman R., 4,272,514, Cl. 424-69.000.
Sperry Corporation: *See—*
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,272,347, Cl. 204-192.00D.
Day, W. Baldwin; and Strenglein, Harry F., 4,272,731, Cl. 331-78.000.
Hartwig, William F., 4,272,808, Cl. 364-718.000.
Stringfellow, H. Berton, 4,271,958, Cl. 198-742.000.

Spichala, Paul: *See—*
Weidl, Johann; Heyer, Gunter; Wecker, Wilhelm; Weippert, Gerhard; and Spichala, Paul, 4,271,869, Cl. 138-30.000.
Spillman, John J., to National Research Development Corporation. Fluid stream deflecting members for aircraft bodies or the like. 4,272,043, Cl. 244-130.000.
Spivey, Alice C. Golf club putter grip. 4,272,077, Cl. 273-81.00R.
Sprague Electric Company: *See—*
Mayrand, James F., 4,272,307, Cl. 148-187.000.
Spychalski, Joseph L.: *See—*
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Square D Company: *See—*
Carroll, James C.; Chapman, Donald L.; Flee, Stephen L.; and McGoldrick, Gilbert A., 4,272,643, Cl. 174-48.000.
Stafford, Robert T. Fence system. 4,272,060, Cl. 256-24.000.
Stamicarbon, B.V.: *See—*
Schepers, Herman A. J., 4,272,431, Cl. 260-42.460.
Standal, Norman S. Pipeline drain apparatus. 4,272,021, Cl. 239-106.000.
Standard Manufacturing Company, Incorporated: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,272,221, Cl. 414-634.000.
Standard Oil Company (Indiana): *See—*
Ginsburgh, Irwin; and Hall, Robert D., 4,271,904, Cl. 166-251.000.
Stanley Electric Co., Ltd.: *See—*
Teshima, Toru; Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,272,702, Cl. 313-493.000.
Stark, Forest G., to AVM Corporation. Cabinet drawer anti-tip lock device. 4,272,138, Cl. 312-221.000.
Starrett, Philip S.: *See—*
Halfpenny, Paul F.; Passarelli, Camillo L.; and Starrett, Philip S., 4,272,014, Cl. 236-44.00B.
Stastny, Edwin O.: *See—*
Schroeder, Marvin C.; and Stastny, Edwin O., 4,272,202, Cl. 400-208.000.
Staudacher, Frank A.: *See—*
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Stauffer Chemical Company: *See—*
Powell, William J., 4,272,496, Cl. 423-210.000.
Steadman, Rufus P. Tower light system. 4,272,802, Cl. 362-385.000.
Steck, Werner; Loeser, Werner; Steuerwald, Manfred; Wunsch, Gerd; and Deigner, Paul, to BASF Aktiengesellschaft. Manufacture of magnetic recording media having a wear-resistant surface. 4,272,563, Cl. 427-130.000.
Stecker, Earl M., to Stoelting, Inc. Drink dispenser spigot with splash deflector. 4,271,986, Cl. 222-151.000.
Steenson, Thomas W.; and Paton, W. Donald, to Butler Manufacturing Company. Movable insulation puncher. 4,271,737, Cl. 83-171.000.
Steenson, Thomas W.; and Paton, W. Donald, to Butler Manufacturing Company. Building panel erection brackets. 4,272,065, Cl. 269-46.000.
Steffancin, William: *See—*
Goldberg, Gerald; Myers, Charles L.; Parsons, Charles F.; and Steffancin, William, 4,272,584, Cl. 428-412.000.
Steger, Donald J., to International Business Machines Corporation. Ribbon shaper for typewriter cartridge. 4,272,201, Cl. 400-208.000.
Steigerwald, Karl H., to Steigerwald Strahltechnik GmbH. Energy beam welding a gap of varying width. 4,272,665, Cl. 219-121.0ED.
Steigerwald Strahltechnik GmbH: *See—*
Steigerwald, Karl H., 4,272,665, Cl. 219-121.0ED.
Stein, Barry F.: *See—*
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,272,347, Cl. 204-192.00D.
Stemme, Otto; and Staudacher, Frank A., to AGFA-Gevaert, A.G. Recording medium and method of making. 4,272,602, Cl. 430-140.000.
Stenberg, Kaj O.; and Traven, Lars J. C., to Gambro AB. Apparatus for the transfer of substances between two fluids with simultaneous tempering of at least one of the fluids. 4,272,373, Cl. 210-175.000.
Stengard, Charles: *See—*
Koponen, Vesa; and Stengard, Charles, 4,271,601, Cl. 34-156.000.
Stepanski, Eugene R., to W. H. Brady Co. Tape dispenser package with roll restraining friction disc. 4,271,962, Cl. 206-411.000.
Stephan, Wolfgang: *See—*
Kotitschke, Ronald; and Stephan, Wolfgang, 4,272,523, Cl. 424-101.000.
Steranko, James J. Wire bonding system and method. 4,272,007, Cl. 228-213.000.
Steuerwald, Manfred: *See—*
Steck, Werner; Loeser, Werner; Steuerwald, Manfred; Wunsch, Gerd; and Deigner, Paul, 4,272,563, Cl. 427-130.000.
Stewart, Hudson: *See—*
Galbraith, Lyle D.; Stewart, Hudson; and Congdon, Jon M., 4,272,301, Cl. 134-8.000.
Stewart, Phillip S. B.; and Lees, Jeremy J., to Woodsreef Mines Limited. Chemical processes. 4,272,495, Cl. 423-167.000.
Stewart-Warner Corporation: *See—*
Mayer, William R.; and Pescetto, James R., 4,272,660, Cl. 200-83.00P.
Stiesi, Walter E.: *See—*
Quagliaro, Daniel A.; and Stiesi, Walter E., 4,271,973, Cl. 215-308.000.
Stiller, Alfred H.; Sears, John T.; and Hammack, Richard W. Coal extraction process. 4,272,356, Cl. 208-8.0LE.
Stirling, Walter R.: *See—*
Hatch, Donald; Ellis, Christopher R.; Gibbon, Richard H.; and Stirling, Walter R., 4,271,937, Cl. 188-264.00F.
Stock, Malcolm G., to Rolls-Royce Motors Limited. Free-moving bumper finisher. 4,272,115, Cl. 293-155.000.
Stoelting, Inc.: *See—*
Stecker, Earl M., 4,271,986, Cl. 222-151.000.
Stokes, Kenneth B., to Medtronic, Inc. Temporary adjustable bipolar lead. 4,271,847, Cl. 128-786.000.
Stone, Kenneth. Bounce flash apparatus. 4,272,169, Cl. 354-126.000.
Stone, Ronald L., to United Kingdom Atomic Energy Authority. Rotary tools. 4,271,733, Cl. 82-4.00C.
Strain, James E.; and Ross, Harley H., to United States of America, Energy. Continuous-flow free acid monitoring method and system. 4,272,247, Cl. 23-230.00R.
Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Process for treating polyvinylidene fluoride and resulting products. 4,272,585, Cl. 428-413.000.
Stravitz, David M., to Ambico Inc. Guitar strap connector. 4,271,999, Cl. 224-257.000.
Streicher, Rolf: *See—*
Lach, Dietrich; Streicher, Rolf; and Feichtmayr, Franz, 4,272,243, Cl. 8-436.000.
Strenglein, Harry F.: *See—*
Day, W. Baldwin; and Strenglein, Harry F., 4,272,731, Cl. 331-78.000.
Stringfellow, H. Berton, to Sperry Corporation. Shuttle cross conveyor. 4,271,958, Cl. 198-742.000.
Stroble, Reimann L.; Hueschen, Robert E.; and Jens, Richard A., to General Electric Company. Preloaded bearing assembly for rotating anode X-ray tubes. 4,272,696, Cl. 313-60.000.
Stubbings, John B.: *See—*
Mingolla, Joseph; and Stubbings, John B., 4,271,555, Cl. 14-73.000.
Stucker, Wesley G.; and Coles, Richard J., Jr., to Koch, Darlene M.; Koch, Robert H.; Coles, Viola C.; Reynolds, Maurice Guy; Reynolds, Lydia M.; Carlson, J. P., Jr.; and Carlson, Carolyn. Radio operated remote control. 4,272,766, Cl. 340-696.000.
Studebaker, Irving G.: *See—*
Hutchins, Ned M.; and Studebaker, Irving G., 4,272,127, Cl. 299-2.000.
Stull, Bertram O.; and Reed, Russell, Jr., to United States of America, Navy. Device for reducing the sensitivity of an ethylene oxide leak detector. 4,272,480, Cl. 422-58.000.
Sturtz, Georges: *See—*
Poisson, Pierre; and Sturtz, Georges, 4,272,457, Cl. 260-953.000.
Subramanian, Kohur N.; Hall, Rotrou A.; and Glaum, Gerald V., to International Nickel Co., Inc., The. Pelletizing sulfation of anode slimes. 4,272,493, Cl. 423-41.000.
Subramanian, Ravanasamudram V.: *See—*
Jakubowski, James J.; and Subramanian, Ravanasamudram V., 4,272,346, Cl. 204-181.00R.
Suckno Brothers Company: *See—*
Suckno, Howard, 4,272,061, Cl. 256-67.000.
Suckno, Howard, to Suckno Brothers Company. Variable pitch rail system. 4,272,061, Cl. 256-67.000.
Suda, Yoshio: *See—*
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,272,464, Cl. 264-22.000.
Suess, Rudolf: *See—*
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Sugano, Kazuhiko: *See—*
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,271,939, Cl. 192-3.300.
Sugiura, Masatoshi: *See—*
Mitsuda, Tadao; Iwata, Minoru; Sugiura, Masatoshi; Takada, Shigetaka; and Watanabe, Yukihiro, 4,271,667, Cl. 60-276.000.
Suligoy, Diane; and Cook, Sharon. Pivot tip hand tool. 4,271,731, Cl. 81-177.0ST.
Suling, Carlhans: *See—*
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Hardt, Dietrich; and Brudermanns, Karola, 4,272,428, Cl. 260-31.20R.
Sulzer Brothers Limited: *See—*
Mandrin, Charles, 4,271,665, Cl. 60-39.18B.
Pfarrwaller, Erwin, 4,271,872, Cl. 139-439.000.
Sumi, Kazumasa: *See—*
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.
Sumitomo Chemical Company, Limited: *See—*
Matsuda, Teruo; Wake, Shigeo; and Shiozaki, Tetsuya, 4,272,435, Cl. 260-192.000.
Sano, Takezo; Shimomura, Takatoshi; Sasaki, Masao; and Murase, Ichiki, 4,272,378, Cl. 210-500.200.
Sumitomo Chemical Industries Ltd.: *See—*
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,272,536, Cl. 424-248.540.
Sumitomo Electric Industries, Ltd.: *See—*
Kashiuchi, Yoshinobu; and Zinguzi, Isamu, 4,272,718, Cl. 324-61.00R.
Kotani, Yasutoyo; Sawada, Kazuo; Nagai, Shuzo; Ogino, Takao; and Watabe, Seiji, 4,272,351, Cl. 204-202.000.
Sumitomo Heavy Industries, Ltd.: *See—*
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Sumitomo Metal Industries Limited: *See—*
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Sumitomo Rubber Industries, Ltd.: *See*—
Nakade, Shinichi; and Tanaka, Michihiro, 4,272,079, Cl. 273-225.000.

Sun, Jui-Yuan: *See*—
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,272,250, Cl. 44-1.0SR.

Sunami, Yoshihiko; and Nishioka, Kunihiko, to Sumitomo Metal Industries Limited. Process for producing shaft furnace cokes. 4,272,324, Cl. 201-21.000.

Sunbeam Corporation: *See*—
Narayan, Raichur S., 4,272,570, Cl. 427-436.000.

Suntech, Inc.: *See*—
Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,272,362, Cl. 208-254.00H.

Suzuki, Katsuhiro: *See*—
Komamura, Seiji; and Suzuki, Katsuhiro, 4,272,056, Cl. 251-309.000.

Suzuki, Kunio. Apparatus for converting hydraulic energy to electrical energy. 4,272,686, Cl. 290-54.000.

Suzuki, Suzuo; Hata, Yoshitaka; and Ohnishi, Akihiro, to Nissan Motor Company, Limited. Feedback control of exhaust gas recirculation based on combustion condition. 4,271,811, Cl. 123-571.000.

Suzuki, Takaharu: *See*—
Togashi, Seigo; Suzuki, Takaharu; and Aoyama, Takaaki, 4,272,162, Cl. 350-349.000.

Svenska Sockerfabriks AB: *See*—
Andersson, Alf H.; and Glifberg, Nils B., 4,271,662, Cl. 56-121.440.

Svensson, Ake. Facing. 4,271,652, Cl. 52-478.000.

Svensson, Sven L. I. Numerical control apparatus for stepped feeding at punch and nibbling machines. 4,272,812, Cl. 364-475.000.

Svoboda, Josef; Krob, Erwin; and Weigl, Erwin, to TMC Corporation. Ski brake. 4,272,099, Cl. 280-605.000.

Svyadosch, Jury N.: *See*—
Ljubman, Nazar Y.; and Svyadosch, Jury N., 4,272,494, Cl. 423-54.000.

Swann, Peter R., to Gatan, Inc. Specimen elevator for an ion milling machine. 4,272,682, Cl. 250-442.000.

Sweers, Ronald L. Eaves trough mounting adapter. 4,271,643, Cl. 52-11.000.

SWS Incorporated: *See*—
Nilsen, Carl J., 4,272,004, Cl. 228-17.500.

Sydlo Inc.: *See*—
Love, Leonard S., 4,272,369, Cl. 210-137.000.

Syndrill Products Joint Venture: *See*—
Sahley, Lloyd W., 4,271,917, Cl. 175-410.000.

Synergistics Chemicals Limited: *See*—
Crocker, Zenas, 4,272,474, Cl. 264-176.00R.

Syntex (U.S.A.) Inc.: *See*—
Walker, Keith A. M., 4,272,545, Cl. 424-273.00R.

Synthelabo: *See*—
Koletar, Gabor I.; Frost, Jonathan R.; Dupont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,272,539, Cl. 424-256.000.

Sypula, Donald S.; and Murphy, Cornelius B., to Xerox Corporation. Magnetic toners containing cubical magnetite. 4,272,600, Cl. 430-106.000.

Syva Company: *See*—
Schwarzberg, Moshe, 4,272,506, Cl. 424-8.000.

Szalay, John J. Ice skate-sharpening apparatus. 4,271,635, Cl. 51-5.00D.

Szejtli, Jozsef; Tetenyi nee Erdosi, Magda; and Tetenyi, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Method for the control of germination of plant seeds and growth of the seedlings. 4,272,276, Cl. 71-76.000.

Tabata, Yasuhiro: *See*—
Satomi, Toyokazu; Koizumi, Yutaka; Nakamura, Isao; Tabata, Yasuhiro; and Kaneko, Tamaki, 4,272,180, Cl. 355-3.0SH.

Tadeusz, Bartosz: *See*—
Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, 4,272,026, Cl. 239-273.000.

Taft, Daniel G.: *See*—
Noerager, Jere A.; Taft, Daniel G.; and Bednar, John M., 4,272,059, Cl. 254-392.000.

Tago, Keiichiro: *See*—
Yasuhara, Takeshi; and Tago, Keiichiro, 4,272,822, Cl. 364-481.000.

Taguchi, Nobuo; Munakata, Tadashi; and Kobayashi, Yoshikata, to Tokyo Shibaura Denki Kabushiki Kaisha. Nondestructive examining apparatus. 4,272,781, Cl. 358-100.000.

Taiyo Kogyo Company Limited: *See*—
Kawaguchi, Mamoru, 4,271,641, Cl. 52-2.000.

Takada, Shigetaka: *See*—
Mitsuda, Tadao; Iwata, Minoru; Sugiura, Masatoshi; Takada, Shigetaka; and Watanabe, Yukihiro, 4,271,667, Cl. 60-276.000.

Takada, Shunji: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Fuseya, Yoshiharu, 4,272,606, Cl. 430-264.000.

Takagi, Kazuhiro: *See*—
Tsuda, Takeshi; Kubota, Michio; Takagi, Kazuhiro; Shimose, Masahiro; Imamura, Yasuo; and Kato, Kazunori, 4,271,571, Cl. 29-25.180.

Takahashi, Kazuyoshi; and Tanaka, Hiromi, to Sumitomo Heavy Industries, Ltd.; and Electric Power Development Co., Ltd. Method for treating a nitrogen oxide- and sulphur oxide-containing waste gas. 4,272,497, Cl. 423-239.000.

Takahashi, Masatoshi: *See*—
Isa, Hiroshi; Takahashi, Masatoshi; and Kadoya, Isamu, 4,272,418, Cl. 260-23.0XA.

Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; Sato, Shosuke; and Matsuzawa, Hideshi, to Tokyo Keiki Company Ltd.; and Totec Co. Ltd. Check digit calculator. 4,272,674, Cl. 235-69.000.

Takahashi, Nagashige: *See*—
Chikashige, Kiyoshi; and Takahashi, Nagashige, 4,271,845, Cl. 128-756.000.

Takanashi, Itsuo: *See*—
Nakagaki, Shintaro; Takanashi, Itsuo; Yokokawa, Sumio; Miyoshi, Tadayoshi; Motoyama, Koichiro; and Miyazaki, Kenichi, 4,272,779, Cl. 358-47.000.

Takao, Syosuke; Kikuchi, Gunpei; Sekiguchi, Masuo; and Kawauchi, Shinji, to Ebara Corporation. Hydraulic motor unit. 4,271,725, Cl. 74-730.000.

Takeda Riken Kogyo Kabushikikaisha: *See*—
Niki, Shoji; and Yoshino, Yuji, 4,272,719, Cl. 324-72.000.

Takeda, Toshiyuki: *See*—
Yamazaki, Hitoshi; Ito, Hiroshi; Takeda, Toshiyuki; and Enomoto, Junzo, 4,272,421, Cl. 260-29.2EP.

Takematsu, Tetsuo; Konnai, Makoto; and Ikeda, Kaoru, to Mitsubishi Petrochemical Co., Ltd. Herbicidal composition and method for controlling weeds. 4,272,283, Cl. 71-94.000.

Takemura, Nobuyuki; and Fukuchi, Ichiro, to Toppan Printing Co., Ltd. Liquid-withdrawing device. 4,271,983, Cl. 222-85.000.

Takenoya, Hideaki: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,271,773, Cl. 112-158.00E.

Takigawa, Hiroyoshi; Yahagi, Mitsuhisa; and Ogawa, Hiroshi, to Bridgestone Tire Co., Ltd. Heavy duty pneumatic radial tire exhibiting less railway wear. 4,271,885, Cl. 152-209.00R.

Talalay, Anselm; and Talalay, Leon. Manufacture of sponge rubber spheres. 4,271,639, Cl. 51-322.000.

Talalay, Leon: *See*—
Talalay, Anselm; and Talalay, Leon, 4,271,639, Cl. 51-322.000.

Talkington, Howard R.: *See*—
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,272,835, Cl. 367-4.000.

Tamaru, Munetaka; Natori, Minoru; and Yamaguchi, Sizuo, to Citizen Watch Co., Ltd. Alarm timepiece. 4,272,836, Cl. 368-74.000.

Tamm, Jurgen. Cosmetics for treatment of hair and skin. 4,272,508, Cl. 424-45.000.

Tamura, Shinichi: *See*—
Fuziwara, Shigeru; and Tamura, Shinichi, 4,272,062, Cl. 266-284.000.

Tanahashi, Toshio: *See*—
Nakanishi, Kiyoshi; Okumura, Takeshi; Deguchi, Ryuichi; and Tanahashi, Toshio, 4,271,803, Cl. 123-432.000.

Tanaka, Hideo: *See*—
Katsumata, Yutaka; Sanagi, Mitsuru; and Tanaka, Hideo, 4,272,819, Cl. 364-200.000.

Tanaka, Hideya: *See*—
Jizaimaru, Tanzo; Tanaka, Hideya; and Sajima, Yasuo, 4,272,352, Cl. 204-279.000.

Tanaka, Hiromi: *See*—
Takahashi, Kazuyoshi; and Tanaka, Hiromi, 4,272,497, Cl. 423-239.000.

Tanaka, Izumi: *See*—
Shirai, Kazunari; Tanaka, Izumi; Tanaka, Shinpei; and Nishimoto, Keiji, 4,271,582, Cl. 29-571.000.

Tanaka, Koji, to Japan Exlan Company Limited. Aqueous microhydrogel dispersions, processes for producing the same, and processes for producing microhydrogels. 4,272,422, Cl. 260-29.6AN.

Tanaka, Mamoru, to Bridgestone Tire Co., Ltd. Binding device for hoses floating on water surface. 4,271,551, Cl. 9-8.00R.

Tanaka, Michihiro: *See*—
Nakade, Shinichi; and Tanaka, Michihiro, 4,272,079, Cl. 273-225.000.

Tanaka, Shinpei: *See*—
Shirai, Kazunari; Tanaka, Izumi; Tanaka, Shinpei; and Nishimoto, Keiji, 4,271,582, Cl. 29-571.000.

Tanaka, Takashi; and Koga, Hirofumi, to Omron Tateisi Electronics Co. Electromagnetic relay. 4,272,745, Cl. 335-128.000.

Tanaka, Yoshio. Disposable portable mask for emergency use. 4,271,834, Cl. 128-205.270.

Tasch, Al F., Jr.: *See*—
Chatterjee, Pallab K.; and Tasch, Al F., Jr., 4,272,303, Cl. 148-1.500.

Taskis, Charles B., to Beecham Group Limited. Use of di-sodium and di-potassium salts of dicarboxylic amino acids and tri- or di-sodium or potassium phosphate tartrate or citrate to improve the taste of in vivo hydrolysable esters of α-amino penicillins and cephalosporins. 4,272,542, Cl. 424-271.000.

Tatemoto, Minoru, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Air conditioning display system for vehicles. 4,271,897, Cl. 165-11.00R.

Taylor, David L., to Harris Corporation. Two switchable resistive element per cell memory array. 4,272,833, Cl. 365-210.000.

Taylor, John B. O.: *See*—
Simpkins, David E.; and Taylor, John B. O., 4,272,526, Cl. 424-180.000.

Taylor Manufacturing Company: *See*—
Chalich, Charles, 4,271,960, Cl. 198-779.000.

Taylor, Norman F.: *See*—
Robinson, Frank M.; and Taylor, Norman F., 4,271,578, Cl. 29-426.300.

Taylor, Richard J.: *See—*
Michael, Peter C.; Taylor, Richard J.; and Kellar, Paul R. N., 4,272,787, Cl. 358-160.000.

TDK Electronics Co., Ltd.: *See—*
Horimoto, Rioichi, 4,272,285, Cl. 75-0.5BA.

Technicon Instruments Corporation: *See—*
Smith, David S., 4,272,505, Cl. 424-8.000.

Teleflex Incorporated: *See—*
Tschanz, August E.; and Geiger, Robert W., 4,271,700, Cl. 73-182.000.

Teletronics International, Inc.: *See—*
Belmares-Sarabia, Armand; Chayka, Stanley J.; and Lund, Robert M., 4,272,780, Cl. 358-54.000.

Templin, Harry W.; and Enders, Edward O., to FMC Corporation. Releasable locking coupling pin for chain links. 4,271,663, Cl. 59-84.000.

Tepavicharov, Hristo D.: *See—*
Velikov, Dancho N.; Kanchev, Kancho T.; Ivanov, Stanislav A.; Ivanov, Ilye H.; and Tepavicharov, Hristo D., 4,272,198, Cl. 366-65.000.

Terada, Sadatugu: *See—*
Tokura, Hiroshi; Sato, Keiji; Tomono, Makoto; Terada, Sadatugu; and Arai, Hideaki, 4,272,601, Cl. 430-108.000.

Teradyne, Inc.: *See—*
Hendriks, Jozef H., 4,272,691, Cl. 307-268.000.

Termont, Charles G., to Deere & Company. Speed retarder control system. 4,272,131, Cl. 303-3.000.

Terramoto, Tougo; Matsushita, Shuzo; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Automatic and manual focus control lens barrel structure. 4,272,174, Cl. 354-195.000.

Teshima, Toru; Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Fluorescent lamp. 4,272,702, Cl. 313-493.000.

Tetenyi nee Erdosi, Magda: *See—*
Szejtli, Jozsef; Tetenyi nee Erdosi, Magda; and Tetenyi, Peter, 4,272,276, Cl. 71-76.000.

Tetenyi, Peter: *See—*
Szejtli, Jozsef; Tetenyi nee Erdosi, Magda; and Tetenyi, Peter, 4,272,276, Cl. 71-76.000.

Tettweiler, Robert; and Ergun, Hayri, to Didier Engineering GmbH. Process for producing coke. 4,272,323, Cl. 201-6.000.

Teutsch, Jean G.; and Philibert, Daniel, to Roussel Uclaf. $\Delta^{1,3,5(10)}$-Estratrienes. 4,272,530, Cl. 424-238.000.

Texaco Canada Inc.: *See—*
Bialek, Rene F., 4,272,360, Cl. 208-188.000.

Texaco Development Corp.: *See—*
Dominguez, Richard J. G.; and Rice, Doris M., 4,272,618, Cl. 521-160.000.

Texaco Inc.: *See—*
Bousaid, Issam S.; and Ho, Benny K-C, 4,271,906, Cl. 166-273.000.

Texas Instruments Incorporated: *See—*
Chatterjee, Pallab K.; and Tasch, Al F., Jr., 4,272,303, Cl. 148-1.500.
Davis, Max G., Jr.; and Mueller, Charles M., 4,272,795, Cl. 360-99.000.
Van Landingham, Richard D., 4,272,793, Cl. 360-78.000.

Textile Products, Inc.: *See—*
Curzio, Frederick H., 4,271,570, Cl. 28-290.000.

Thekdi, Arvind C.; and Mayers, Richard R., to Midland-Ross Corporation. Direct heating of heat treat furnace chamber. 4,272,239, Cl. 432-19.000.

Theobald, Barbara A.: *See—*
George, Louis J.; and Theobald, Barbara A., 4,272,594, Cl. 430-14.000.

Theuman, James L., to Markay International, Inc. Shellfish extraction tool. 4,271,563, Cl. 17-71.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile rail welding machine. 4,272,664, Cl. 219-53.000.

Thiele, Horst: *See—*
Landwehr, Gunter; and Thiele, Horst, 4,271,776, Cl. 112-311.000.

Thielemann, Klaus: *See—*
Bachmann, Willi; Thielemann, Klaus; and von der Wall, Klaus, 4,271,886, Cl. 152-209.00R.

Thiessen, Robert J.: *See—*
Shaw, Michael J.; and Thiessen, Robert J., 4,272,569, Cl. 427-336.000.

Thode, Lester E., to United States of America, Energy. Device and method for electron beam heating of a high density plasma. 4,272,319, Cl. 176-5.000.

Thomas, Alford M.: *See—*
Von Esch, Anne M.; Thomas, Alford M.; Fairgrieve, John S.; and Seely, John H., 4,272,528, Cl. 424-211.000.

Thomas, Alfred W.; and op den Camp, Lutz E. A., to Lucas Industries Limited. Servo boosters for vehicle braking systems. 4,271,750, Cl. 92-98.00D.

Thomas, Donald G., to Anson Engineering Pty. Ltd. Surveying staffs. 4,271,598, Cl. 33-293.000.

Thomas, Donald O., Jr.: *See—*
Slagle, Grady M., Jr.; and Thomas, Donald O., Jr., 4,271,903, Cl. 166-129.000.

Thompson, E. Arthur. Fire array and apparatus. 4,271,817, Cl. 126-298.000.

Thompson, Kenneth P., to Champion International Corporation. Process for extruding films of thermoplastic polyester film-forming materials. 4,272,312, Cl. 156-244.110.

Thompson, Leonard R.; and Kearney, J. Kevin, to Dow Chemical Company, The. Chlorinated phenol mold release agent. 4,272,636, Cl. 568-776.000.

Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Apparatus for production of mineral fibers. 4,272,271, Cl. 65-1.000.

Thomson-CSF: *See—*
Croset, Michel; and Velasco, Gonzalo, 4,272,350, Cl. 204-195.00S.
Dieulesaint, Eugene; Royer, Daniel; and Guedj, Richard, 4,272,676, Cl. 250-221.000.
Dubois, Jean-Claude; Eranian, Armand; and Paimblant, Paul, 4,272,589, Cl. 428-442.000.

Thomson, Ronald E.; and Hammermeister, David W., to Madison-Kipp Corporation. Enclosed lubricating apparatus. 4,271,930, Cl. 184-15.00A.

Thor, David L., to Container Corporation of America. Tamperproof overcap. 4,271,972, Cl. 215-251.000.

Three Phoenix Company: *See—*
Barnett, David L., 4,272,235, Cl. 425-397.000.

Thym, Sabine: *See—*
Ammermann, Eberhard; Thym, Sabine; and Pommer, Ernst-Heinrich, 4,272,551, Cl. 424-324.000.

Thyssen Industrie AG: *See—*
Lipp, Willi, 4,271,572, Cl. 29-26.00A.

Tice Engineering & Sales, Inc.: *See—*
Tice, William A., 4,271,775, Cl. 112-276.000.

Tice, William A., to Tice Engineering & Sales, Inc. Needle positioner for high speed stitching machines. 4,271,775, Cl. 112-276.000.

Tillotson Corporation: *See—*
Tillotson, John G., 4,271,688, Cl. 68-5.00D.

Tillotson, John G., to Tillotson Corporation. Apparatus for treating plaited yarns. 4,271,688, Cl. 68-5.00D.

Timex Corporation: *See—*
Feldman, Abe, 4,271,709, Cl. 74-5.120.

Timmons, David R., to Automation Industries, Inc. Air device with flexible mounting system. 4,271,751, Cl. 98-40.00D.

Timofeeva, Ljudmila P.: *See—*
Belkevich, Peter I.; Buslovich, Solomon J.; Dolidovich, Elena F.; Kaganovich, Fanya L.; Komov, Oktyabr P.; and Timofeeva, Ljudmila P., 4,272,527, Cl. 424-195.000.

Tippmann, Joseph R.; and Daugherty, Richard G. Dasher board for ice skating rinks and method of making same. 4,271,622, Cl. 40-606.000.

Tisdale, Clarence F. Locket assembly. 4,271,684, Cl. 63-19.000.

Titzenthaler, Eckart; and Schwen, Roland, to BASF Aktiengesellschaft. Silver-containing carrier catalysts, process for their manufacture, and process for the manufacture of ethylene oxide using these catalysts. 4,272,443, Cl. 260-348.340.

TMC Corporation: *See—*
Svoboda, Josef; Krob, Erwin; and Weigl, Erwin, 4,272,099, Cl. 280-605.000.

Toennies, Jan P.: *See—*
Faubel, Manfred; Holber, William M.; and Toennies, Jan P., 4,272,699, Cl. 313-360.000.

Togashi, Seigo; Suzuki, Takaharu; and Aoyama, Takaaki, to Citizen Watch Co., Ltd. Guest-host liquid crystal display device. 4,272,162, Cl. 350-349.000.

Tokico Ltd.: *See—*
Katsumori, Teiji; and Ishida, Kunio, 4,272,064, Cl. 267-64.00R.

Toko, Inc.: *See—*
Iguchi, Yasuhide; and Koike, Tsutomu, 4,272,805, Cl. 363-19.000.

Tokura, Hiroshi; Sato, Keiji; Tomono, Makoto; Terada, Sadatugu; and Arai, Hideaki, to Konishiroku Photo Industry Co., Ltd. Coated developer carrier for electrophotography. 4,272,601, Cl. 430-108.000.

Tokyo Keiki Company Ltd.: *See—*
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; Sato, Shosuke; and Matsuzawa, Hideshi, 4,272,674, Cl. 235-69.000.

Tokyo Koso K.K.: *See—*
Zinnai, Sadazi, 4,272,054, Cl. 251-173.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Komatsu, Shigeru, 4,272,304, Cl. 148-1.500.
Matsumoto, Yoshihiro, 4,272,816, Cl. 364-483.000.
Taguchi, Nobuo; Munakata, Tadashi; and Kobayashi, Yoshikata, 4,272,781, Cl. 358-100.000.

Tomita, Joseph T.: *See—*
Kim, Yung D.; Tomita, Joseph T.; and Schenck, Jay R., 4,272,504, Cl. 424-1.000.

Tomono, Makoto: *See—*
Tokura, Hiroshi; Sato, Keiji; Tomono, Makoto; Terada, Sadatugu; and Arai, Hideaki, 4,272,601, Cl. 430-108.000.

Tomuro, Yasushi. Spike shoe. 4,271,608, Cl. 36-61.000.

Tonai, Koichi: *See—*
Hirano, Tomoyuki; Yamanaka, Akira; and Tonai, Koichi, 4,272,114, Cl. 293-133.000.

Toombs, Gary C.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,272,149, Cl. 339-258.00R.

Topor, Michael G.: *See—*
Schroeder, Otto E.; Wohlman, Alan; and Topor, Michael G., 4,272,554, Cl. 426-321.000.

Toppan Printing Co., Ltd.: *See—*
Takemura, Nobuyuki; and Fukuchi, Ichiro, 4,271,983, Cl. 222-85.000.

Torii, Hiromasa: *See—*
Katayama, Yoshinori; and Torii, Hiromasa, 4,272,120, Cl. 296-210.000.

Torisawa, Akira: *See*—
Ueda, Makoto; Torisawa, Akira; Satoh, Katsuhiko; Shida, Masaharu; Mandai, Masaaki; and Asano, Kazuhiro, 4,272,837, Cl. 368-80.000.

Toro Company, The: *See*—
Foster, Leslie W., 4,271,658, Cl. 56-11.300.

Torrington, Leslie A., to RCA Corporation. Video disc player having record extracting mechanism. 4,272,083, Cl. 369-77.000.

Toscano, Luciano: *See*—
Riva, Mario; and Toscano, Luciano, 4,272,446, Cl. 260-397.450.

Toshiba Kikai Kabushiki Kaisha: *See*—
Matsumoto, Mitsuo, 4,272,715, Cl. 318-800.000.

Totec Co. Ltd.: *See*—
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; Sato, Shosuke; and Matsuzawa, Hideshi, 4,272,674, Cl. 235-69.000.

Totta, Paul A.: *See*—
Rothman, Laura B.; Totta, Paul A.; and White, James F., 4,272,561, Cl. 427-84.000.

Towmotor Corporation: *See*—
Buchwald, Frank S.; Maher, Richard C.; and Buchina, Jerome E., 4,272,695, Cl. 310-242.000.

Toyama, James. Generating means. 4,272,685, Cl. 290-52.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Mori, Fumio; and Ishibashi, Kazuhisa, 4,272,313, Cl. 156-262.000.

Toyoda, Toshikazu: *See*—
Yamakawa, Yoshio; Toyoda, Toshikazu; and Nohira, Hidetaka, 4,271,801, Cl. 123-432.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Arai, Hajime, 4,271,715, Cl. 74-360.000.
Furutani, Toshinobu; Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; and Wakisaka, Hiroshi, 4,272,349, Cl. 204-195.00S.
Kato, Takayuki; Sumi, Kazumasa; Arakawa, Hideo; Ito, Toshimitsu; and Sanada, Masakatsu, 4,271,799, Cl. 123-425.000.
Mitsuda, Tadao; Iwata, Minoru; Sugiura, Masatoshi; Takada, Shigetaka; and Watanabe, Yukihiro, 4,271,667, Cl. 60-276.000.
Nakanishi, Kiyoshi; Okumura, Takeshi; Deguchi, Ryuichi; and Tanahashi, Toshio, 4,271,803, Cl. 123-432.000.
Watanabe, Noboru; Inoue, Tokuta; and Oishi, Kiyohiko, 4,272,460, Cl. 261-53.000.
Yamakawa, Yoshio; Toyoda, Toshikazu; and Nohira, Hidetaka, 4,271,801, Cl. 123-432.000.

Traenckner, Hans-Joachim: *See*—
Frank, Walter; Bendszus, Otto; Freier, Hans-Joachim; and Traenckner, Hans-Joachim, 4,272,420, Cl. 260-28.00R.

Trahan, Albert J.; Beckwith, Bruce R.; and Murray, David B., to Emhart Industries, Inc. Plunger mechanism for glassware forming machine. 4,272,273, Cl. 65-167.000.

Train, David B., to Reynolds Metals Company. Folding carton structure. 4,271,964, Cl. 206-633.000.

Trane Company, The: *See*—
Butt, Alan G., 4,272,462, Cl. 261-153.000.

Transidyne General Corporation: *See*—
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., 4,272,245, Cl. 23-230.00B.

Trapp, Horst: *See*—
Vyvial, Rudolf; Wallbillich, Guenter; and Trapp, Horst, 4,272,611, Cl. 430-306.000.

Traven, Lars J. C.: *See*—
Stenberg, Kaj O.; and Traven, Lars J. C., 4,272,373, Cl. 210-175.000.

Treen, J. Paul. Safety ink pen. 4,272,206, Cl. 401-105.000.

Tremco, Inc.: *See*—
Kumins, Charles A.; and Warford, Milan L., 4,272,582, Cl. 428-332.000.

Treseder, Robert C., to International Business Machines Corporation. Electrophotographic printer with duplex printed sheet output. 4,272,181, Cl. 355-14.0SH.

Trestianu, Sorin: *See*—
Sisti, Giorgio; Trestianu, Sorin; and Galli, Mario, 4,271,695, Cl. 73-23.100.

Trico Products Corporation: *See*—
D'Alba, Anthony R., 4,271,558, Cl. 15-250.420.

Troncoso, Nestor J.: *See*—
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,272,259, Cl. 44-1.0SR.

Troster, Dietrich: *See*—
Grun, Reinhold; Troster, Dietrich; and Gleich, Bruno, 4,271,569, Cl. 26-79.000.

Trout, Donald M. Self-locking automatically-releasing sash balance for tiltabiy-removable sliding sash windows. 4,271,631, Cl. 49-181.000.

Trussell, Charlie W., Jr., to United States of America, Army. Bright source attenuating device for an image intensifier. 4,272,164, Cl. 350-357.000.

Tryon, Erwin. Adjustable taper ring collar. 4,272,086, Cl. 279-1.00S.

Tschanz, August E.; and Geiger, Robert W., to Teleflex Incorporated. Pitot tube assembly. 4,271,700, Cl. 73-182.000.

Tse, Samuel Y. H., to Procor Limited. Pelletizing apparatus. 4,272,234, Cl. 425-222.000.

Tsuda, Hiroshi: *See*—
Ishimoto, Osamu; Tsuda, Hiroshi; and Miyashita, Kiyoshi, 4,271,784, Cl. 118-652.000.

Tsuda, Keishiro: *See*—
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Tufte, Ralph W., Jr. Apparatus and method of disposing of pet waste and the like. 4,272,116, Cl. 294-1.00B.

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Ueda, Nobuo, to Laurel Bank Machine Co., Ltd. Coin selecting apparatus. 4,271,855, Cl. 133-3.00D.

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Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Shock absorbent shifting device. 4,272,160, Cl. 350-429.000.

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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
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U.S. Philips Corporation: *See*—
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Lippits, Gerardus J. M.; van den Broek, Arnoldus J. M.; and Dijkstra, Rinse, 4,272,574, Cl. 428-64.000.
Lux, Peter, 4,272,820, Cl. 364-414.000.
Nieuwendijk, Joris A. M.; Vink, Nicolaas G.; and Heijnemans, Werner A. L., 4,272,727, Cl. 335-213.000.
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Valdespino, Joseph M. Internal combustion engine. 4,271,793, Cl. 123-3.000.
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Valo, Antti T. Blade for a cutter for a chipper or similar wood reducing machine. 4,271,882, Cl. 144-241.000.
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Vanderknyff, Jacobus J. M., to Varian Associates. Inductive delay line and method of making. 4,272,741, Cl. 333-138.000.
van der Lely, Cornelis. Soil cultivating machines. 4,271,911, Cl. 172-68.000.
Vanderloop, James P. Silo door. 4,271,632, Cl. 49-192.000.
Vandersall, H. Lawrence, to Monsanto Company. Chemical retardants for forest fires. 4,272,414, Cl. 252-602.000.
Van Kreuningen, Rudolf; and Ray, Dan O., to Kraco Enterprises, Inc. Automatic cassette cleaner. 4,272,796, Cl. 360-128.000.
Van Landingham, Richard D., to Texas Instruments Incorporated. System and method for positioning a magnetic head transducer on a flexible storage media. 4,272,793, Cl. 360-78.000.
Van Santen, Gordon L., to Pliotron Corporation of Canada Limited. Screw and nut arrangement for jack posts. 4,272,058, Cl. 254-98.000.
Vargas, Ovidio: *See*—
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Varshney, Ramesh C. Method of forming recessed isolation oxide layers. 4,272,308, Cl. 148-187.000.
Vaughan, Hugh R. Auger assembly moving device. 4,271,919, Cl. 180-16.000.
Vaughan, James E., Jr. Cam-operating adjustable plier wrench with overtravel stop device. 4,271,732, Cl. 81-414.000.
Vavra, Gary J., to Green Line, Inc. 180 Degree folding device. 4,271,711, Cl. 74-96.000.
Vayenas, Costas G.; and Ortman, David E., to Massachusetts Institute of Technology. Method and apparatus for forming nitric oxide from ammonia. 4,272,336, Cl. 204-59.00R.
VDO Adolf Schindling AG: *See*—
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Velikov, Dancho N.; Kanchev, Kancho T.; Ivanov, Stanislav A.; Ivanov, Ilye H.; and Tepavicharov, Hristo D., to VMEI (Vish Maschinno-Elektrotechnicheski Institute). Device for the dispersion of cement solutions. 4,272,198, Cl. 366-65.000.
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Viertel, Lothar; and Nowak, Manfred, to Gebr. Happich GmbH. Electric connection to sun visor for automotive vehicles, or the like. 4,272,118, Cl. 296-97.00R.
Vihko, Reijo. Discardable reaction receptacle for use in immunological assay. 4,272,478, Cl. 422-57.000.
Vilbeuf, Jean, to Sifra. Seat with damped suspension system. 4,272,117, Cl. 296-65.00R.
Vinals, Joaquin F.: *See*—
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Vinette, Richard H. Game ball target return apparatus and method. 4,272,078, Cl. 273-182.00R.
Vink, John J.: *See*—
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Vink, Nicolaas G.: *See*—
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von Roesgen, Charles A., to Bell Telephone Laboratories, Incorporated. Quick-connect interconnection system. 4,271,573, Cl. 29-33.00M.

Vyvial, Rudolf; Wallbillich, Guenter; and Trapp, Horst, to BASF Aktiengesellschaft. Photopolymerizable composition for the production of printing plates and relief plates, and the elements produced therewith. 4,272,611, Cl. 430-306.000.

W. H. Brady Co.: *See*—
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WABCO Westinghouse GmbH: *See*—
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Wada, Tatsuhiko; and Abe, Zenuemon, to Hokkaido University, President of. Magnetic modulator for magnetic field detection differentially outputting magnetic core noise. 4,272,724, Cl. 324-253.000.

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Wakamatsu, Hisato, to Nippon Soken, Inc. Automatic transmission system. 4,271,728, Cl. 74-866.000.

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Walker, Brian; and Merrie, Kenneth, to Process Scientific Innovations Limited. Apparatus for making filter elements for gas or liquid. 4,272,318, Cl. 162-382.000.

Walker, Jack M., to Raychem Corporation. Method for forming laminates comprising an electrode and a conductive polymer layer. 4,272,471, Cl. 264-104.000.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Derivatives of thienyl- and furyl-substituted N-butyl and N-phenyl imidazoles. 4,272,545, Cl. 424-273.00R.

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Warford, Milan L.: *See*—
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Warnstam, Lars-Ake; Jonsson, Rune; and Ludvigsson, Georg, to Saab-Scania AB. Correlation follower for tracking an object. 4,272,783, Cl. 358-126.000.

Washington State University Research Foundation: *See*—
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Watkins, Robert G., Jr. Tractor-trailer land vehicle. 4,272,089, Cl. 280-5.00C.

Watson, James M., to Cosden Technology, Inc. Polymerization inhibitor for vinyl aromatic compounds. 4,272,344, Cl. 202-154.000.

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Bienert, Horst; Igel, Richard; and Rengstl, Johann, 4,272,125, Cl. 296-223.000.
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Webster, Frank G.; Regan, Michael T.; and Rossi, Louis J., to Eastman Kodak Company. Electrophotosensitive materials for migration imaging processes. 4,272,595, Cl. 430-37.000.

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Weiner, Nathan K.; and Ketchum, David D., to Electronics Corporation of America. Interface circuit for use with electronic control devices. 4,272,725, Cl. 324-415.00R.

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Wellman, Carl P.: *See*—
Wellman, Gary L.; Wellman, Carl P.; and Wellman, Naomi M., 4,271,787, Cl. 119-1.000.

Wellman, Gary L.; Wellman, Carl P.; and Wellman, Naomi M. Disposable container with litter for animals. 4,271,787, Cl. 119-1.000.

Wellman, Naomi M.: *See*—
Wellman, Gary L.; Wellman, Carl P.; and Wellman, Naomi M., 4,271,787, Cl. 119-1.000.

Wempe, Richard J.; and Behle, Gunter R., to ACF Industries, Incorporated. Combination top operable and bottom operable tank lading valve assembly. 4,272,053, Cl. 251-144.000.

Wermelin, Harald. Lightweight injectable, thixotropic foam insulating material. 4,272,388, Cl. 252-62.000.

Werth, Dee A.: *See*—
Brush, Robert W.; Werth, Dee A.; and Schildkraut, Alan L., 4,272,144, Cl. 339-89.00R.

Western Litho Plate & Supply Co.: *See*—
Meador, Jim D.; and Parker, Edward H., 4,272,604, Cl. 430-159.000.
Meador, Jim D.; and Parker, Edward H., 4,272,605, Cl. 430-169.000.

Westerveld, Eduard P.: *See*—
Proper, Johannes; Schuur, Jacob; Monte, George L. A.; and Westerveld, Eduard P., 4,272,782, Cl. 358-111.000.

Westgate, Harry H.: *See*—
Hamblin, Ronald F.; and Westgate, Harry H., 4,272,135, Cl. 308-20.000.

Westinghouse Electric Corp.: *See*—
Cook, John W.; and Drankhan, Voit C., 4,272,688, Cl. 307-123.000.
Merola, Carl R., 4,272,798, Cl. 361-345.000.
Miller, Coleman J.; and Davis, Daniel, 4,272,770, Cl. 343-782.000.
Morse, Alfred W., 4,272,692, Cl. 307-268.000.
Yoldas, Bulent E.; Filippi, Arthur M.; and Buckman, Raymond W., Jr., 4,272,588, Cl. 428-433.000.

Westlin, Karl L.: *See*—
Britt, Monroe; and Westlin, Karl L., 4,272,262, Cl. 55-302.000.

Weston, David, to Reynolds Metals Company. Upgrading of bauxites, bauxitic clays, and aluminum mineral bearing clays. 4,272,029, Cl. 241-16.000.

Westvaco Corporation: *See*—
Force, Carlton G., 4,272,419, Cl. 260-27.0BB.

Wetterskog, Herman E.: *See*—
Casey, Martin J.; Stein, Barry F.; and Wetterskog, Herman E., 4,272,347, Cl. 204-192.00D.

Wewerka, Anton: *See*—
Holl, Alfred; and Wewerka, Anton, 4,271,730, Cl. 81-57.400.

Wheat, Ira N. Roller skate. 4,272,090, Cl. 280-11.220.

Wheeler, Keith A.; and Hastings, Dawson W., to Allis-Chalmers Corporation. Articulated plow with horizontal angularity between its frames. 4,271,913, Cl. 172-633.000.

Wheelock, Richard A.: *See—*
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,272,835, Cl. 367-4.000.

Whitaker, William C.; and Canfield, Allen B., to Rexham Corporation. Packaging machine with funnel-type filling mechanism. 4,271,877, Cl. 141-166.000.

White, Alan C.: *See—*
Edington, Edwin T.; and White, Alan C., 4,272,628, Cl. 546-284.000.

White, Geoffrey T. Microwave leakage detectors. 4,272,765, Cl. 340-600.000.

White, Herbert O. Variable speed drive unit. 4,271,712, Cl. 74-141.000.

White, James F.: *See—*
Rothman, Laura B.; Totta, Paul A.; and White, James F., 4,272,561, Cl. 427-84.000.

Whitener, Philip C.: *See—*
Ketner, Clyde R.; and Whitener, Philip C., 4,271,975, Cl. 220-80.000.

Wichita Pro-Tech Inc.: *See—*
Bowlus, Burton R.; and McKinney, Gerald L., 4,271,537, Cl. 2-424.000.

Wick, Gerhard: *See—*
Gerlach, Klaus; and Wick, Gerhard, 4,272,377, Cl. 210-321.300.

Wiechert, Rudolf: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; Kieslich, Klaus; and Wiechert, Rudolf, 4,272,630, Cl. 560-6.000.

Wieffen, Karl-Heinz, to Klockner-Humboldt-Deutz AG. Starting techniques for an electro-pneumatically actuated wet settling machine. 4,272,367, Cl. 209-500.000.

Wiegand, Josef. Pleasure vehicle and a transportation system utilizing the same. 4,271,762, Cl. 104-69.000.

Wierusz, Lech: *See—*
Bacal, Kazimierz; and Wierusz, Lech, 4,271,836, Cl. 128-303.00R.

Wildi, Edwin, to Maschinenfabrik Benninger AG. Thread-tensioning device on a warp creel. 4,272,038, Cl. 242-150.00R.

Willey, Melvin G., to United States of America, Energy. Particle blender. 4,272,232, Cl. 425-200.000.

Williams, Charles E., to Hester Industries, Inc. High humidity food chilling system. 4,271,683, Cl. 62-374.000.

Williams Electronics, Inc.: *See—*
Pfeiffer, Randall R., 4,272,649, Cl. 179-1.0SM.

Williams, G. Norman: *See—*
Gallaro, Anthony V.; Lane, Joseph E.; and Williams, G. Norman, 4,272,701, Cl. 313-479.000.

Williams, Paul. System for adapting top head drilling rigs for reverse circulation drilling. 4,271,916, Cl. 175-215.000.

Williams, Richard L.: *See—*
Pearce, James C.; and Williams, Richard L., 4,271,933, Cl. 188-2.00F.

Williams, Theodore L.: *See—*
Prazak, Paul R.; and Williams, Theodore L., 4,272,760, Cl. 340-347.0CC.

Williamson, Harry L. Sheet thickness monitoring system and method. 4,271,699, Cl. 73-159.000.

Willis, Brian J.; Christenson, Philip A.; and Mack, Robert, to Fritzsche Dodge & Olcott Inc. Halogen containing ionone derivatives and compositions containing same. 4,272,412, Cl. 252-522.00R.

Wilson, Richard A.: *See—*
Mookherjee, Braja D.; Wilson, Richard A.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,271,853, Cl. 131-276.000.

Wimsatt, James M.: *See—*
Lynch, Patrick E., Jr.; and Wimsatt, James M., 4,272,261, Cl. 55-279.000.

Wine, William L.: *See—*
Dean, Arthur L.; and Wine, William L., 4,272,366, Cl. 209-364.000.

Wingrave, James A., to Conoco, Inc. Apparatus to measure plasticizer absorption in polymer powders. 4,271,698, Cl. 73-74.000.

Wipfler, Alfred: *See—*
Schlick, Horst; Rau, Karl; Wipfler, Alfred; and Lueg-Althoff, Joachim, 4,272,112, Cl. 292-201.000.

Wipke, Walter J.: *See—*
Quinn, Paul A., Jr.; and Wipke, Walter J., 4,272,204, Cl. 400-342.000.

Withalm, Gert; and Hiereth, Hermann, to Daimler-Benz Aktiengesellschaft. Internal combustion engine with an exhaust gas turbocharger. 4,271,672, Cl. 60-602.000.

Wittchow, Eberhard, to Kraftwerk Union Aktiengesellschaft. Steam generator for generating steam from feedwater of reduced quality. 4,271,792, Cl. 122-406.00S.

Wittlinger, Harold A., to RCA Corporation. Differential-input amplifier circuit. 4,272,728, Cl. 330-253.000.

Wohlman, Alan: *See—*
Schroeder, Otto E.; Wohlman, Alan; and Topor, Michael G., 4,272,554, Cl. 426-321.000.

Wolga, George J.: *See—*
Smithline, Leonard M.; and Wolga, George J., 4,272,825, Cl. 364-571.000.

Woltersdorf, Otto W., Jr.; deSolms, S. Jane; and Smith, Robert L., to Merck & Co., Inc. 3-Amino-5-substituted-6-halo-N-(4,4-disubstituted-6-substituted-1,3,5-triazin-2-yl)-2-pyrazinecarboxamides. 4,272,537, Cl. 424-249.000.

WOMA Apparatebau Wolfgang Maasberg & Co. GmbH: *See—*
Maasberg, Wolfgang, 4,272,108, Cl. 285-95.000.

Wong, Thomas S., to Advanced Micro Devices, Inc. Write and read control circuit for semiconductor memories. 4,272,811, Cl. 365-190.000.

Wood, Charles; and Fralick, Richard, to DAF Indal Ltd. Swimming pool platform and components. 4,271,542, Cl. 4-495.000.

Wood, Grady M., to Harris Corporation. Method of fabricating amorphous memory devices of reduced first fire threshold voltage. 4,272,562, Cl. 427-87.000.

Wood, Linda D.: *See—*
Lawrance, Richard J.; and Wood, Linda D., 4,272,353, Cl. 204-283.000.

Wood, Milton D., to M. D. Wood, Inc. Method of determining change in subsurface structure due to application of fluid pressure to the earth. 4,271,696, Cl. 73-37.000.

Woodruff, Frank, to Bendix Corporation, The. Variable displacement balanced vane pump. 4,272,227, Cl. 417-440.000.

Woodsreef Mines Limited: *See—*
Stewart, Phillip S. B.; and Lees, Jeremy J., 4,272,495, Cl. 423-167.000.

Wozniacki, Roger M., to International Paper Company. Star divider. 4,272,008, Cl. 229-15.000.

Wright, Allen R.: *See—*
Scott, Keith; and Wright, Allen R., 4,272,333, Cl. 204-23.000.

Wright, John J., to Schering Corporation. Derivatives of polyene macrolide antibiotics containing an amino sugar moiety, process for the preparation thereof, and pharmaceutical compositions containing them. 4,272,525, Cl. 424-177.000.

Wright, Robert J., to Lever Brothers Company. Germicidal compositions. 4,272,395, Cl. 252-106.000.

Wright, William W.; and Vojir, Frank S., to Guardian Electric Manufacturing Company. Four pole double throw relay. 4,272,746, Cl. 335-128.000.

Wristers, Harry J. Supported Ziegler catalysts and method therefor. 4,272,404, Cl. 252-429.00B.

Wristers, Harry J., deceased; and by Wristers, Joy K., sole beneficiary. Ziegler transition metal halide catalysts and method therefor. 4,272,405, Cl. 252-429.00B.

Wristers, Joy K., sole beneficiary: *See—*
Wristers, Harry J., deceased; and Wristers, Joy K., sole beneficiary, 4,272,405, Cl. 252-429.00B.

Wuerzer, Bruno: *See—*
Hansen, Hanspeter; Eicken, Karl; Plath, Peter; Rohr, Wolfgang; and Wuerzer, Bruno, 4,272,282, Cl. 71-92.000.

Wulf, Helmut: *See—*
Braun, Dieter; Mehren, Herbert; and Wulf, Helmut, 4,271,764, Cl. 104-247.000.

Wunsch, Gerd: *See—*
Steck, Werner; Loeser, Werner; Steuerwald, Manfred; Wunsch, Gerd; and Deigner, Paul, 4,272,563, Cl. 427-130.000.

Wurlitzer Company, The: *See—*
Hoskinson, William R.; Solender, Peter E.; and Machanian, William V., 4,271,741, Cl. 84-1.030.

Wurttembergische Metallwarenfabrik: *See—*
Probost, Werner, 4,272,332, Cl. 204-15.000.

Wylie, David G.: *See—*
Millward, Thomas H.; Wylie, David G.; and Clarke, Philip C., 4,271,717, Cl. 74-467.000.

Wyzsza Szkola Inzynierska Im. Jurija Gagarina: *See—*
Bacal, Kazimierz; and Wierusz, Lech, 4,271,836, Cl. 128-303.00R.

Xaver, Wirth; and Mathias, Schorwerth, to Knorr-Bremse GmbH. Closure for retaining an insertable brake lining in a brake lining holder for disk brakes. 4,271,936, Cl. 188-244.000.

Xerox Corporation: *See—*
Handy, Roland J., 4,272,759, Cl. 340-347.0AD.
Harbour, John R.; and Hair, Michael L., 4,272,596, Cl. 430-37.000.
Lehman, Richard F.; and Corona, Stephen C., 4,272,188, Cl. 355-68.000.
Rezanka, Ivan, 4,272,184, Cl. 355-15.000.
Seachman, Ned J., 4,272,684, Cl. 250-578.000.
Seanor, Donald A., 4,272,179, Cl. 355-3.0FU.
Sypula, Donald S.; and Murphy, Cornelius B., 4,272,600, Cl. 430-106.000.

Yagi, Takeshi: *See—*
Yamanaka, Minoru; Yamaya, Yukio; and Ichikawa. Masahide, 4,272,669, Cl. 219-385.000.

Yahagi, Mitsuhisa: *See—*
Takigawa, Hiroyoshi; Yahagi, Mitsuhisa; and Ogawa, Hiroshi, 4,271,885, Cl. 152-209.00R.

Yajima, Tadamasa; Kitagawa, Shuzo; and Hata, Hiromi, to Daido Tokushuko Kabushiki Kaisha. Process for refining molten steel containing chromium. 4,272,287, Cl. 75-60.000.

Yamada, Hideo: *See—*
Tsukada, Katsushige; Hayashi, Nobuyuki; Yamada, Hideo; Ishimaru, Toshiaki; and Kakumaru, Hajime, 4,272,607, Cl. 430-288.000.

Yamada, Keiichi: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,271,805, Cl. 123-459.000.
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,271,808, Cl. 123-506.000.

Yamada, Yoji: *See—*
Nishimura, Sadanori; Yamada, Yoji; Shimizu, Takeyuki; and Yamashita, Masaru, 4,271,951, Cl. 192-106.00F.

Yamaguchi, Sizuo: *See*—
Tamaru, Munetaka; Natori, Minoru; and Yamaguchi, Sizuo, 4,272,836, Cl. 368-74.000.

Yamakawa, Yoshio; Toyoda, Toshikazu; and Nohira, Hidetaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with twin intake ports for each cylinder. 4,271,801, Cl. 123-432.000.

Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Housing for front-drive automatic transmission for transverse engine of automotive vehicle. 4,271,721, Cl. 74-695.000.

Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Akiyama, Shinichi, to Nippon Zeon Co., Ltd. Catalyst for oxidation of isobutylene. 4,272,637, Cl. 568-780.000.

Yamamura, Masahiro: *See*—
Mizumoto, Katsuji; Hanada, Toshihide; Kominami, Yasuo; and Yamamura, Masahiro, 4,272,709, Cl. 318-317.000.

Yamanaka, Akira: *See*—
Hirano, Tomoyuki; Yamanaka, Akira; and Tonai, Koichi, 4,272,114, Cl. 293-133.000.

Yamanaka, Minoru; Yamaya, Yukio; and Ichikawa, Masahide, to Yagi, Takeshi. Heater. 4,272,669, Cl. 219-385.000.

Yamashita, Masaru: *See*—
Nishimura, Sadanori; Yamada, Yoji; Shimizu, Takeyuki; and Yamashita, Masaru, 4,271,951, Cl. 192-106.00F.

Yamauchi, Yuzuru: *See*—
Hirano, Norimasa; and Yamauchi, Yuzuru, 4,272,423, Cl. 260-29.6TA.

Yamaya, Yukio: *See*—
Yamanaka, Minoru; Yamaya, Yukio; and Ichikawa, Masahide, 4,272,669, Cl. 219-385.000.

Yamazaki, Hitoshi; Ito, Hiroshi; Takeda, Toshiyuki; and Enomoto, Junzo, to Mitsubishi Denki Kabushiki Kaisha. Method for preparing water-soluble lacquer. 4,272,421, Cl. 260-29.2EP.

Yamazaki, Masahiro; Akiyama, Takayasu; Makuta, Yoshihiro; and Maruoka, Tosikuni, to Nippon Zeon Co., Ltd. Cutting apparatus for potting material with hollow fibers embedded therein. 4,271,740, Cl. 83-592.000.

Yankielun, Norbert E.: *See*—
MacKenzie, George W.; Shackelton, Clifford W.; and Yankielun, Norbert E., 4,272,655, Cl. 179-159.000.

Yardley, John P.; and Corbin, Alan, to American Home Products Corporation. Claudogenic-interceptive nonapeptide. 4,272,432, Cl. 260-112.50R.

Yasuda, Tadahiro: *See*—
Nishikawa, Masaji; Amemiya, Norio; Yasuda, Tadahiro; and Nakayama, Shigeru, 4,272,597, Cl. 430-68.000.

Yasuhara, Takeshi; and Tago, Keiichiro, to Fuji Electric Co., Ltd. Apparatus for converting a mechanical displacement to an electrical signal. 4,272,822, Cl. 364-481.000.

Yew, Kwang, to Canadian Fram Limited. Clutch having segmented band. 4,271,948, Cl. 192-84.00T.

Yokokawa, Sumio: *See*—
Nakagaki, Shintaro; Takanashi, Itsuo; Yokokawa, Sumio; Miyoshi, Tadayoshi; Motoyama, Koichiro; and Miyazaki, Kenichi, 4,272,779, Cl. 358-47.000.

Yokouchi, Takashi: *See*—
Oyama, Hiroo; and Yokouchi, Takashi, 4,272,698, Cl. 313-272.000.

Yoldas, Bulent E.; Filippi, Arthur M.; and Buckman, Raymond W., Jr., to Westinghouse Electric Corp. Oxide protected mirror. 4,272,588, Cl. 428-433.000.

Yoneda, Koji; Ohashi, Takehisa; Onishi, Masami; and Fukumitsu, Hirotaka, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Permanent waving compositions. 4,272,517, Cl. 424-72.000.

Yoneyama, Masakazu; Kishimoto, Shinzo; and Nakayama, Yasuhiro, to Fuji Photo Film Co., Ltd. Photographic light-sensitive antistatic containing material. 4,272,615, Cl. 430-527.000.

Yoneyama, Nobuaki: *See*—
Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Akiyama, Shinichi, 4,272,637, Cl. 568-780.000.

Yoshida Kogyo K.K.: *See*—
Aoki, Tsunetaka, 4,271,567, Cl. 24-205.14R.
Kasai, Kazumi, 4,271,689, Cl. 70-68.000.

Yoshida, Masaru: *See*—
Kaetsu, Isao; Kumakura, Minoru; and Yoshida, Masaru, 4,272,617, Cl. 435-182.000.

Yoshida, Minoru; and Arikawa, Junichi, to Laurel Bank Machine Co., Ltd. Apparatus for holding stack of sheets in sheet counting machine. 4,272,067, Cl. 271-95.000.

Yoshida, Mitunari: *See*—
Teshima, Toru; Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,272,702, Cl. 313-493.000.

Yoshida, Tomio; Nakata, Yoshinobu; Harigae, Shunji; and Sato, Toshio, to Matsushita Electric Industrial Co., Ltd. Optical system having diode laser light source. 4,272,651, Cl. 369-112.000.

Yoshimine, Masao: *See*—
Siegel, Sanford A.; Yoshimine, Masao; and Kao, Che-I, 4,272,635, Cl. 568-776.000.

Yoshinaga, Shoji: *See*—
Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, 4,272,011, Cl. 233-15.000.

Yoshino, Yuji: *See*—
Niki, Shoji; and Yoshino, Yuji, 4,272,719, Cl. 324-72.000.

Yoshioka, Kyozo: *See*—
Nagatomo, Katsuaki; Hisatomi, Shigenobu; Fujiwara, Kiyoshi; Fukumori, Hiromasa; Yoshinaga, Shoji; and Yoshioka, Kyozo, 4,272,011, Cl. 233-15.000.

Yoshizawa, Daisuke. Method of removing snow from ground surface. 4,271,617, Cl. 37-195.000.

Young, Alastair J., to Automotive Products Limited. Control mechanisms for vehicle braking systems. 4,272,132, Cl. 303-22.00R.

Young, Frederick A.; and Rusch, Willard V. T. Microwave antenna with parabolic main reflector. 4,272,769, Cl. 343-781.00P.

Young, R. Gregg: *See*—
McFadden, Russell T.; Krause, Reuben L.; and Young, R. Gregg, 4,272,621, Cl. 525-355.000.

Young, Rocky M. Y.: *See*—
Schmidt, Carson T.; Ward, William P.; and Young, Rocky M. Y., 4,272,829, Cl. 364-900.000.

Zaeschmar, Guenther, to United States of America, Navy. Method of attaching LED chip to a header. 4,271,584, Cl. 29-584.000.

Zapata Industries, Inc.: *See*—
Smith, Donald C., 4,271,953, Cl. 198-347.000.

Zapf, Richard L., to Brown, Milton; Anderson, Laurence L.; Smith, Leonard; and Belin, David, part interest to each. Jumper cable. 4,272,142, Cl. 339-29.00B.

Zastrow, Klaus D., to Anheuser-Busch, Incorporated. Process for producing a low carbohydrate, low calorie beer. 4,272,552, Cl. 426-13.000.

Zdzislaw, Czelny: *See*—
Jazlowski, Aleksander; Michal, Rudnicki; Tadeusz, Bartosz; Zdzislaw, Czelny; Jozef, Zurkowski; and Henryk, Romanczyk, 4,272,026, Cl. 239-273.000.

Zelacolor Systems Establishment: *See*—
Guillaume, Emile A. H., 4,272,172, Cl. 354-161.000.

Zellweger Uster, Ltd.: *See*—
Grunder, Werner, 4,271,565, Cl. 19-240.000.

Zeltner, Bernard; and Marmonnier, Gaston, to Manufacture Provencale de Matieres Plastiques SA. Soil supports for plant containers. 4,271,630, Cl. 47-81.000.

Zenith Radio Corporation: *See*—
Beaumont, Gregory J., 4,272,705, Cl. 315-408.000.

Ziegenbein, Willi; and Von Praun, Ferdinand, to Chemische Werke Huls Aktiengesellschaft. Process for preparing gaseous hydrogen chloride from dilute aqueous hydrochloric acid. 4,272,502, Cl. 423-488.000.

Zimmerman, Barbara: *See*—
Schachner, Dianne; and Zimmerman, Barbara, 4,272,070, Cl. 272-62.000.

Zimmerman Brush Co.: *See*—
Caron, Beryl, 4,271,557, Cl. 15-180.000.

Zin-Plas Corporation: *See*—
Evans, Frank C., 4,272,022, Cl. 239-107.000.

Zinguzi, Isamu: *See*—
Kashiuchi, Yoshinobu; and Zinguzi, Isamu, 4,272,718, Cl. 324-61.00R.

Zinn, Roland C.: *See*—
Joseph, Daniel, Jr. II, 4,272,209, Cl. 403-408.000.

Zinnai, Sadazi, to Tokyo Koso K.K. Fire-safe sealing device for valve. 4,272,054, Cl. 251-173.000.

Zins, Raymond V. Sliding door safety bar. 4,272,113, Cl. 292-262.000.

Zoecon Corporation: *See*—
Kohn, Gustave K.; and Baer, Ted A., 4,272,449, Cl. 260-453.990.

Zudkevitch, David: *See*—
Hertzog, Richard R.; and Zudkevitch, David, 4,272,326, Cl. 203-62.000.

Zuffi, Timothy R., to Cutter Laboratories, Inc. Purified immune serum globulin. 4,272,521, Cl. 424-85.000.

Zurcher, Erwin: *See*—
Durville, Gerard; Moulin, Michel; Ramseier, Serge; and Zurcher, Erwin, 4,271,568, Cl. 26-9.000.

Zurn Industries, Inc.: *See*—
Gidner, Robert R., 4,272,052, Cl. 251-39.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

August Bilstein, Firma: *See*—
Keilholz, Friedrich, Re. 30,640, Cl. 254-126.000.

Austen Bryars of London, Inc.: *See*—
Bryars, David J. J., Re. 30,638, Cl. 66-191.000.

Becker, Mitchell, to Halcon Research & Development Corp. Process for preparing molybdenum acid salts. Re. 30,642, Cl. 260-414.000.

Bryars, David J. J., to Austen Bryars of London, Inc. Multi-gauge knit fabric with fleece inlay yarn. Re. 30,638, Cl. 66-191.000.

Cojafex B.V.: *See*—
Hofstede, Marinus J.; Hermans, Leonardus J. C.; and de Koe, Jan W., Re. 30,639, Cl. 72-8.000.

de Koe, Jan W.: *See*—
Hofstede, Marinus J.; Hermans, Leonardus J. C.; and de Koe, Jan W., Re. 30,639, Cl. 72-8.000.

General Electric Company: *See*—
Whetten, Nathan R.; and Houston, John M., Re. 30,644, Cl. 250-385.000.

Gore, William C.: *See*—
King, John H.; and Gore, William C., Re. 30,637, Cl. 40-495.000.

Halcon Research & Development Corp.: *See*—
Becker, Mitchell, Re. 30,642, Cl. 260-414.000.

Hermans, Leonardus J. C.: *See*—
Hofstede, Marinus J.; Hermans, Leonardus J. C.; and de Koe, Jan W., Re. 30,639, Cl. 72-8.000.

Hofstede, Marinus J.; Hermans, Leonardus J. C.; and de Koe, Jan W., to Cojafex B.V. Process and device for bending elongated articles. Re. 30,639, Cl. 72-8.000.

Houston, John M.: *See*—
Whetten, Nathan R.; and Houston, John M., Re. 30,644, Cl. 250-385.000.

International Standard Electric Corporation: *See*—
Nill, Eberhard; and Schmidt, Peter, Re. 30,643, Cl. 427-69.000.

Johnson & Johnson: *See*—
Verdicchio, Robert J.; and Rodon, Maria C., Re. 30,641, Cl. 252-526.000.

Keilholz, Friedrich, to August Bilstein, Firma. Vehicle lifting jack. Re. 30,640, Cl. 254-126.000.

King, John H.; and Gore, William C. Vehicle dispatch indicator with color-coded, alphabetical and numerical indicia. Re. 30,637, Cl. 40-495.000.

Nill, Eberhard; and Schmidt, Peter, to International Standard Electric Corporation. Method of aluminizing the inside of the panel of a television picture tube. Re. 30,643, Cl. 427-69.000.

Rodon, Maria C.: *See*—
Verdicchio, Robert J.; and Rodon, Maria C., Re. 30,641, Cl. 252-526.000.

Schmidt, Peter: *See*—
Nill, Eberhard; and Schmidt, Peter, Re. 30,643, Cl. 427-69 000.

Verdicchio, Robert J.; and Rodon, Maria C., to Johnson & Johnson. Low irritating detergent compositions. Re. 30,641, Cl. 252-526.000.

Whetten, Nathan R.; and Houston, John M., to General Electric Company. X-ray detector. Re. 30,644, Cl. 250-385.000.

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MacLean, Charles A. Horseman figure. 259,479, 6-9-81, Cl. D11-159.000.

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Maheu, Gilles. Picnic table. 259,448, 6-9-81, Cl. D6-45.000.

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Nygards, Nils. Filler for liquid containers. 259,506, 6-9-81, Cl. D23-1.000.

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Salisbury, William F. Training bat. 259,501, 6-9-81, Cl. D21-211.000.

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Schoch, Robert R. Simulative toy mobile. 259,478, 6-9-81, Cl. D11-141.000.

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Szymanski, John. Carpet designer's iron. 259,463, 6-9-81, Cl. D7-203.000.

Taub, Ronald H. Prescored assembly unit blank for display standard, or similar article. 259,449, 6-9-81, Cl. D6-85.000.

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LIST OF PLANT PATENTEES

Bailey, Catherine H.; and Hough, L. Fredric, to Stark Brothers Nurseries & Orchards Company. Apple tree—N.J. 49 cultivar. 4,740, 6-9-81, Cl. 34.000.
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4,271,707
861.28 4,271,708
861.42 4,271,701
863.11 4,271,703
864.63 4,271,704

CLASS 74

5.12 4,271,709
27 4,271,710
96 4,271,711
141 4,271,712
198 4,271,713
202 4,271,714
360 4,271,715
422 4,271,716
467 4,271,717
522 4,271,718
594.2 4,271,719
600 4,271,720
695 4,271,721
710.5 4,271,722
720 4,271,723
4,271,724
730 4,271,725
805 4,271,726
813 R 4,271,727
866 4,271,728

CLASS 75

0.5 BA 4,272,285
51 4,272,286
60 4,272,287
101 BE 4,272,288
122 4,272,289
212 4,272,290

CLASS 81

9.5 B 4,271,729
57.4 4,271,730
177 ST 4,271,731
414 4,271,732

CLASS 82

4 C 4,271,733
34 R 4,271,734
36 R 4,271,735

CLASS 83

156 4,271,736
171 4,271,737
174 4,271,738
175 4,271,739
592 4,271,740

CLASS 84

1.03 4,271,741
1.26 4,271,742
4,271,743
330 4,271,744
402 4,271,745
454 4,271,746

CLASS 89

1.814 4,271,748

CLASS 91

358 R 4,271,749

CLASS 92

98 D 4,271,750

CLASS 98

40 D 4,271,751

CLASS 99

289 R 4,271,752
4,271,753

CLASS 100

37 4,271,754
52 4,271,755
220 4,271,756

CLASS 101

37 4,271,757
110 4,271,758
4,271,759
142 4,271,760

CLASS 102

504 4,271,761

CLASS 104

69 4,271,762
179 4,271,763
247 4,271,764

CLASS 105

164 4,271,765

CLASS 106

14.05 4,272,291
22 4,272,292
73.6 4,272,293
99 4,272,294
157 4,272,295
288 B 4,272,296
306 4,272,297
309 4,272,298

CLASS 108

111 4,271,766

CLASS 112

2 4,271,767
68 4,271,768
79 FF 4,271,769
84 4,271,770
122 4,271,771
137 4,271,772
158 E 4,271,773
262.1 4,271,774
276 4,271,775
311 4,271,776

CLASS 113

1 G 4,271,777
121 AB 4,271,778

CLASS 114

67 A 4,271,779
144 E 4,271,780

CLASS 118

623 4,271,782
629 4,271,783
652 4,271,784
661 4,271,785
4,271,786

CLASS 119

1 4,271,787
3 4,271,788

CLASS 122

16 4,271,789
26 4,271,790
39 4,271,791
406 S 4,271,792

CLASS 123

3 4,271,793
308 4,271,795
321 4,271,796
412 4,271,797
419 4,271,798
425 4,271,799
430 4,271,800
432 4,271,801
4,271,802
4,271,803
440 4,271,804
454 4,271,794
459 4,271,805
502 4,271,806
506 4,271,807
4,271,808
522 4,271,809
568 4,271,810
571 4,271,811
609 4,271,812

CLASS 124

7 4,271,813

CLASS 126

121 4,271,814
4,271,815
132 4,271,816
298 4,271,817
417 4,271,818
4,271,819
4,271,820
4,271,821
426 4,271,822
445 4,271,823
449 4,271,824
450 4,271,825
4,271,826

CLASS 127

29 4,272,299

CLASS 128

1 R 4,271,827
4,271,828
4,271,840
6 4,271,829
73 4,271,830
80 C 4,271,831
92 A 4,271,832
92 E 4,271,849
201.29 4,271,833
205.27 4,271,834
270 4,271,835
303 R 4,271,836
303.14 4,271,837
318 4,271,838
344 4,271,839
419 R 4,271,841
661 4,271,842
681 4,271,843
4,271,844
756 4,271,845
785 4,271,846
786 4,271,847
804 4,271,848

CLASS 130

27 JT 4,271,850

CLASS 131

276 4,271,853
292 4,271,852

CLASS 132

89 4,271,854

CLASS 133

3 D 4,271,855

CLASS 134

5 4,272,300
8 4,272,301

CLASS 135

4 A 4,271,856

CLASS 136

249 4,272,641

CLASS 137

73 4,271,857
74 4,271,858
85 4,271,859
110 4,272,640
240 4,271,860
387 4,271,861
511 4,271,862
557 4,271,863
599 4,271,864
614.06 4,271,865
625.21 4,271,867
625.3 4,271,866
625.64 4,271,868

CLASS 138

30 4,271,869
94.3 4,271,870

CLASS 139

384 B 4,271,871
439 4,271,872
446 4,271,873

CLASS 141

1 4,271,874
3 4,271,875
12 4,271,876
166 4,271,877
375 4,271,878

CLASS 144

2 N 4,271,879
134 R 4,271,880
209 R 4,271,881
241 4,271,882

CLASS 148

1.5 4,272,302
4,272,303
4,272,304
12 E 4,272,305
16.5 4,272,306
187 4,272,307
4,272,308

CLASS 150

1 4,271,883

CLASS 152

209 R 4,271,885
4,271,886
220 4,271,887
234 4,271,888
352 R 4,271,890
4,271,891
353 R 4,271,889

CLASS 156

117 4,272,309
172 4,272,310
215 4,272,311
244.11 4,272,312
262 4,272,313
494 4,272,314

CLASS 157

1 4,271,884

CLASS 160

92 4,271,892
178 R 4,271,893

CLASS 162

4 4,272,315
206 4,272,316
272 4,272,317
382 4,272,318

CLASS 164

87 4,271,894
109 4,271,895
449 4,271,896

CLASS 165

11 R 4,271,897
16 4,271,898
29 4,271,899
162 4,271,900
165 4,271,901

CLASS 166

117.5 4,271,902
129 4,271,903
251 4,271,904
263 4,271,905
273 4,271,906
274 4,271,907
315 4,271,908

CLASS 169

70 4,271,909

CLASS 172

7 4,271,910
68 4,271,911
441 4,271,912
633 4,271,913

CLASS 173

158 4,271,914

CLASS 174

31 R 4,272,642
48 4,272,643
52 FP 4,272,644
65 G 4,272,645
88 B 4,272,646

CLASS 175

56 4,271,915
215 4,271,916
410 4,271,917

CLASS 176

5 4,272,319
9 4,272,320
87 4,272,321

CLASS 179

1 AL 4,272,647
1 SM 4,272,649
1 VL 4,272,648
77 4,272,650
115 R 4,272,653
119 A 4,272,654
159 4,272,655
170 NC 4,272,656

CLASS 180

6.48 4,271,918
16 4,271,919
55 4,271,920
89.12 4,271,921
254 4,271,922

CLASS 181

114 4,271,923
120 4,271,924
4,271,925

CLASS 182

2 4,271,926
36 4,271,927

CLASS 184

6.24 4,271,929
6.4 4,271,928
15 A 4,271,930

CLASS 187

29 R 4,271,931
95 4,271,932

CLASS 188

2 F 4,271,933
170 4,271,934
185 4,271,935
244 4,271,936
264 F 4,271,937
280 4,271,938

CLASS 192

3.3 4,271,939
4 C 4,271,940
35 4,271,941
48.91 4,271,942
53 F 4,271,943
56 L 4,271,944
58 B 4,271,945
4,271,946
82 T 4,271,947
84 T 4,271,948
98 4,271,949
4,271,950
106 F 4,271,951

CLASS 194

97 R 4,271,952

CLASS 198

347 4,271,953
399 4,271,954
400 4,271,955
613 4,271,956
737 4,271,957
742 4,271,958
777 4,271,959
779 4,271,960

CLASS 200

5 A 4,272,657
6 B 4,272,658
82 D 4,272,659
83 P 4,272,660
144 B 4,272,661
275 4,272,662

CLASS 201

6 4,272,322
4,272,323
21 4,272,324

CLASS 202

154 4,272,344
248 4,272,325

CLASS 203

62 4,272,326

CLASS 204

1 T 4,272,328
4,272,329
4,272,330
4,272,331
15 4,272,332
23 4,272,333
27 4,272,334
52 R 4,272,335
59 R 4,272,336
98 4,272,337
4,272,338
106 4,272,339
114 4,272,340
118 4,272,341
129.4 4,272,342
130 4,272,343
157.1 R 4,272,345
181 R 4,272,346
192 D 4,272,347
192 E 4,272,348
195 S 4,272,349
4,272,350
202 4,272,351
279 4,272,352
283 4,272,353
290 R 4,272,354
298 4,272,355

CLASS 206

216 4,271,961
219 4,271,965
411 4,271,962
444 4,271,963
633 4,271,964

CLASS 208

8 LE 4,272,356
89 4,272,357
120 4,272,358
179 4,272,359
188 4,272,360
254 H 4,272,362
254 R 4,272,361

CLASS 209

10 4,272,363
166 4,272,364
223 R 4,272,365
364 4,272,366
500 4,272,367
558 4,271,967
564 4,271,968
576 4,271,966

CLASS 210

90 4,272,368
137 4,272,369
162 4,272,370
168 4,272,371
169 4,272,372
175 4,272,373
180 4,272,374
194 4,272,375
230 4,272,376
321.3 4,272,377
500.2 4,272,378
621 4,272,379
658 4,272,380
4,272,381
660 4,272,382
741 4,272,383

CLASS 211

64 4,271,969

CLASS 212

146 4,271,970

CLASS 215

220 4,271,971
251 4,271,972
308 4,271,973
331 4,271,974

CLASS 219

10.55 E 4,272,663
53 4,272,664
121 ED 4,272,665
216 4,272,666
326 4,272,667
375 4,272,668
385 4,272,669
390 4,272,670
505 4,272,671
523 4,272,672
544 4,272,673

CLASS 220

80 4,271,975
206 4,271,976
371 4,271,977

CLASS 221

243 4,271,978
288 4,271,979
297 4,271,980

CLASS 222

32 4,271,981
83 4,271,982
85 4,271,983
94 4,271,984
96 4,271,985
151 4,271,986
160 4,271,987
214 4,271,988
282 4,271,989
321 4,271,990
389 4,271,991
509 4,271,992
591 4,271,993
602 4,271,994

CLASS 223

47 4,271,995

CLASS 224

32 A 4,271,996
42.45 R 4,271,997
160 4,271,998
257 4,271,999

CLASS 226

1 4,272,000
187 4,272,001

CLASS 227

19 4,272,002

CLASS 228

13 4,272,003
17.5 4,272,004
107 4,272,005
183 4,272,006
213 4,272,007

CLASS 229

15 4,272,008
41 R 4,272,009
43 4,272,010

CLASS 233

15 4,272,011

CLASS 235

69 4,272,674
463 4,272,675

CLASS 236

1 E 4,272,012
1 G 4,272,013
44 B 4,272,014
49 4,272,015

CLASS 237

56 4,272,016

CLASS 239

1 4,272,017
8 4,272,018
4,272,019
4,272,020
106 4,272,021
107 4,272,022
204 4,272,023
206 4,272,024
240 4,272,025
273 4,272,026
585 4,272,027
687 4,272,028

CLASS 241

16 4,272,029
37 4,272,030
46.17 4,272,031
263 4,272,032

CLASS 242

7.05 B 4,272,033
35.5 R 4,272,034
71.1 4,272,035
96 4,272,036
118.1 4,272,037
150 R 4,272,038

CLASS 244

1 R 4,272,039
3.22 4,272,040
17.21 4,272,041
115 4,272,042
130 4,272,043
153 R 4,272,044
170 4,272,045
226 4,272,046

CLASS 248

74 PB 4,272,047
430 4,272,048

CLASS 249

83 4,272,049
144 4,272,050

CLASS 250

221 4,272,676
252 4,272,677
363 S 4,272,678
372 4,272,679
375 4,272,680
385 Re.30,644
423 P 4,272,681
442 4,272,682
507 4,272,683
578 4,272,684

CLASS 251

6 4,272,051
39 4,272,052
144 4,272,053
173 4,272,054
214 4,272,055
309 4,272,056
315 4,272,057

CLASS 252

8.55 R 4,272,384
8.6 4,272,386
46.4 4,272,387
62 4,272,388
69 4,272,389
70 4,272,390
4,272,391
4,272,392
91 4,272,393
99 4,272,394
106 4,272,395
174.12 4,272,396
301.6 S 4,272,397
316 4,272,398
373 4,272,399
413 4,272,400
4,272,401
417 4,272,402
428 4,272,403
429 B 4,272,404
4,272,405
430 4,272,406
4,272,407
437 4,272,408
455 R 4,272,409
465 4,272,410
516 4,272,411
522 R 4,272,412
525 4,272,413
526 Re.30,641
602 4,272,414
608 4,272,385

CLASS 254

98 4,272,058
126 Re.30,640
392 4,272,059

CLASS 256

24 4,272,060
67 4,272,061

CLASS 260

2.3 4,272,436
18 EP 4,272,416
18 S 4,272,415
22 R 4,272,417
23 XA 4,272,418
27 BB 4,272,419
28 R 4,272,420
29.2 EP 4,272,421
29.6 AN 4,272,422
29.6 RW 4,272,424
29.6 TA 4,272,423
29.7 H 4,272,426
29.7 PT 4,272,425
30.6 R 4,272,427
31.2 R 4,272,428
37 N 4,272,429
39 R 4,272,430
42.46 4,272,431
112.5 R 4,272,432
4,272,433
156 4,272,434
192 4,272,435
239 A 4,272,437
239.1 4,272,438
245.2 R 4,272,439
343.6 4,272,440
346.73 4,272,441
346.74 4,272,442
348.34 4,272,443
397.3 4,272,444
397.4 4,272,445
397.45 4,272,446
414 Re.30,642
425 4,272,447
448 R 4,272,448
453.99 4,272,449
463 4,272,450
465.1 4,272,451
4,272,452
543.1 4,272,453
544 N 4,272,454
953 4,272,457

CLASS 261

23 A 4,272,458
34 A 4,272,459
53 4,272,460
93 4,272,461
153 4,272,462
328 4,271,851

CLASS 264

12 4,272,463
22 4,272,464
33 4,272,465
40.6 4,272,466
41 4,272,467
53 4,272,468
4,272,469
104 4,272,470
4,272,471
146 4,272,472
154 4,272,473
176 R 4,272,474
210.1 4,272,475
225 4,272,476

CLASS 266

284 4,272,062
286 4,272,063

CLASS 267

64 R 4,272,064

CLASS 269

46 4,272,065

CLASS 271

95 4,272,067
117 4,272,068
182 4,272,069

CLASS 272

62 4,272,070
70.4 4,272,071
71 4,272,072
111 4,272,073
120 4,272,074

CLASS 273

1 E 4,272,075
58 C 4,272,076
81 R 4,272,077
182 R 4,272,078
225 4,272,079
249 4,272,080
265 4,272,081
356 4,272,082

CLASS 277

30 4,272,084
235 B 4,272,085

CLASS 279

1 S 4,272,086
62 4,272,087
114 4,272,088

CLASS 280

5 C 4,272,089
11.22 4,272,090
11.28 4,272,091
43.23 4,272,092
206 4,272,093
217 4,272,094
220 4,272,095
255 4,272,096
411 A 4,272,097
494 4,272,098
605 4,272,099
650 4,272,100
692 4,272,101
731 4,272,102
751 4,272,103
801 4,272,104
804 4,272,105

CLASS 282

27.5 4,272,106

CLASS 283

1 A 4,272,107
1 B 4,272,327

CLASS 285

95 4,272,108
336 4,272,109

CLASS 290

52 4,272,685
54 4,272,686

CLASS 291

23 4,272,110

CLASS 292

17 4,272,111
201 4,272,112
262 4,272,113

CLASS 293

133 4,272,114
155 4,272,115

CLASS 294

1 B 4,272,116

CLASS 296

65 R 4,272,117
97 R 4,272,118
100 4,272,119
210 4,272,120
216 4,272,121
221 4,272,122
222 4,272,123
4,272,124
223 4,272,125

CLASS 297

258 4,272,126

CLASS 299

2 4,272,127
12 4,272,128
31 4,272,129
34 4,272,130

CLASS 303

3 4,272,131
22 R 4,272,132
99 4,272,133

CLASS 307

115 4,272,687
123 4,272,688
147 4,272,689
265 4,272,690
268 4,272,691
4,272,692
304 4,272,693
427 4,272,694

CLASS 308

8.2 4,272,134
20 4,272,135

CLASS 310

242 4,272,695

CLASS 312

196 4,272,136
214 4,272,137
221 4,272,138
334 4,272,139

CLASS 313

60 4,272,696
123 4,272,697
272 4,272,698
360 4,272,699
458 4,272,700
479 4,272,701
493 4,272,702

CLASS 315

205 4,272,703
4,272,704
408 4,272,705

CLASS 318

6 4,272,706
139 4,272,707
266 4,272,708
317 4,272,709
470 4,272,710
565 4,272,711
696 4,272,712
4,272,713
783 4,272,714
800 4,272,715

CLASS 320

14 4,272,716

CLASS 323

226 4,272,717

CLASS 324

61 R 4,272,718
72 4,272,719
4,272,720
73 R 4,272,721
76 R 4,272,722
86 4,272,723
253 4,272,724
415 R 4,272,725

CLASS 329

103 4,272,726

CLASS 330

253 4,272,728

CLASS 331

1 A 4,272,729
16 4,272,730
78 4,272,731
94.5 F 4,272,733
94.5 P 4,272,732
94.5 S 4,272,734
108 B 4,272,735
4,272,736

CLASS 332

1 4,272,737

CLASS 333

28 R 4,272,738
81 A 4,272,739
127 4,272,740
138 4,272,741
155 4,272,742
176 4,272,743
249 4,272,744

CLASS 335

128 4,272,745
4,272,746
213 4,272,727
257 4,272,747
271 4,272,748

CLASS 336

233 4,272,749

CLASS 337

1 4,272,750
231 4,272,751
276 4,272,752
297 4,272,753

CLASS 338

21 4,272,754

CLASS 339

17 CF 4,272,140
18 R 4,272,141
29 B 4,272,142
74 R 4,272,143
89 R 4,272,144
91 R 4,272,145
99 R 4,272,146
4,272,147
143 R 4,272,148
258 R 4,272,149
276 T 4,272,150

CLASS 340

58 4,272,755
146.3 H 4,272,756
152 R 4,272,757
310 A 4,272,758
347 AD 4,272,759
347 CC 4,272,760
500 4,272,761
556 4,272,762
571 4,272,763
575 4,272,764
600 4,272,765
696 4,272,766
722 4,272,767

CLASS 343

18 C 4,272,768
781 P 4,272,769
782 4,272,770

CLASS 346

75 4,272,771
140 R 4,272,772
4,272,773

CLASS 350

6.6 4,272,151
27 4,272,152
36 4,272,153
96.22 4,272,154
96.23 4,272,155
96.26 4,272,156
320 4,272,161
349 4,272,162
357 4,272,163
4,272,164
374 4,272,157
375 4,272,158
4,272,159
429 4,272,160

CLASS 351

13 4,272,165
111 4,272,166

CLASS 353

120 4,272,167

CLASS 354

51 4,272,168
126 4,272,169
149 4,272,170
152 4,272,171
161 4,272,172
173 4,272,173
195 4,272,174
238 4,272,176
274 4,272,175
293 4,272,177
298 4,272,178

CLASS 355

3 FU 4,272,179
3 SH 4,272,180
14 D 4,272,182
14 R 4,272,183
14 SH 4,272,181
15 4,272,184
28 4,272,185
34 4,272,186
56 4,272,187
68 4,272,188

CLASS 356

28 4,272,189
124 4,272,190
153 4,272,191
347 4,272,192
349 4,272,193
350 4,272,194
368 4,272,195
371 4,272,196
434 4,272,197

CLASS 357

23 4,272,774
29 4,272,775
50 4,272,776

CLASS 358

10 4,272,777
23 4,272,778
47 4,272,779
54 4,272,780
100 4,272,781
111 4,272,782
126 4,272,783
127 4,272,784
4,272,785
128.5 4,272,786
160 4,272,787
189 4,272,788
282 4,272,789

CLASS 360

14 4,272,790
33 4,272,791
69 4,272,792
78 4,272,793
97 4,272,794
99 4,272,795
128 4,272,796

CLASS 361

93 4,272,797
345 4,272,798

CLASS 362

145 4,272,799
242 4,272,800
336 4,272,801
385 4,272,802
399 4,272,803
408 4,272,804

CLASS 363

19 4,272,805
21 4,272,806
126 4,272,807
129 4,272,814

CLASS 364

118 4,272,818
200 4,272,815
4,272,819
414 4,272,820
475 4,272,812
4,272,821
481 4,272,822
483 4,272,816
500 4,272,823
502 4,272,824
571 4,272,825
709 4,272,826
718 4,272,808
764 4,272,827
900 4,272,809
4,272,810
4,272,813
4,272,828
4,272,829

CLASS 365

12 4,272,817
45 4,272,830
4,272,831
189 4,272,832
190 4,272,811
210 4,272,833
230 4,272,834

CLASS 366

65 4,272,198
130 4,272,199

CLASS 367

4 4,272,835

CLASS 368

74 4,272,836
80 4,272,837
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107 4,272,839
202 4,272,840
224 4,272,841
316 4,272,842

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24 4,272,843
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CLASS 408

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CLASS 411

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634 4,272,221
694 4,272,222

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440 4,272,227
460 4,272,228
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57 4,272,478
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447.1 4,272,501
488 4,272,502

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180 4,272,526
195 4,272,527
211 4,272,528
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246 4,272,531
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58 4,272,560
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332 4,272,582
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529 4,272,616

CLASS 431

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CLASS 432

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CLASS 434

289 4,271,604

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CLASS 440

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CLASS 455

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CLASS 493

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CLASS 521

160 4,272,618
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61 4,272,620
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CLASS 528

15 4,272,623
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284 4,272,628

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CLASS 560

6 4,272,630

CLASS 562

559 4,272,631

CLASS 564

501 4,272,632
503 4,272,455

CLASS 568

364 4,272,633
432 4,272,634
776 4,272,635
4,272,636
780 4,272,637

CLASS 570

186 4,272,456

CLASSIFICATION OF DESIGNS

D2—	24	259,451	D7—	20	259,459			259,471	D13—	24	259,485	D21—	16	259,497	D24—	21	259,509
D3—	35	259,450		50	259,460			259,472	D14—	68	259,486		17	259,498		38	259,510
	61	259,445			259,461	D10—	1	259,474		73	259,487		26	259,499		54	259,511
D6—	40	259,447			259,462			259,475	D15—	4	259,488		88	259,500	D25—	74	259,512
	45	259,448		203	259,463		71	259,476		5	259,489		211	259,501		77	259,513
	85	259,449	D8—	72	259,464	D11—	90	259,477			259,490		245	259,502	D26—	26	259,514
	113	259,452		359	259,465		141	259,478			259,491	D22—	25	259,503		28	259,515
	114	259,453		499	259,466		159	259,479	D16—	06	259,492		27	259,504			259,516
	145	259,454	D9—	300	259,467	D12—	102	259,481		42	259,493		30	259,505		56	259,517
	177	259,455		415	259,468		111	259,482	D17—	14	259,494	D23—	1	259,506		131	259,518
	184	259,456		420	259,473		146	259,483	D18—	19	259,495		19	259,507	D27—	28	259,519
	191	259,457		432	259,469		209	259,484	D19—	76	259,496		153	259,508	D99—	49	259,446
	201	259,458			259,470		318	259,480									

CLASSIFICATION OF PLANTS

P.—	11	4,735		4,736		12	4,737		20	4,738		30	4,739		34	4,740

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PATENTS

6 :	4,271,979	4,271,926	4,272,685	4,272,610	4,271,956		4,272,142
	4,272,575	4,271,958	4,272,723	12 : 4,271,638	4,271,972		4,272,226
9 :	4,271,666	4,271,969	4,272,730	4,271,647	4,271,976		4,272,246
	4,271,954	4,271,989	4,272,734	4,271,664	4,272,025	20 : 4,271,537	4,272,576
01 :	4,272,063	4,271,997	4,272,741	4,271,738	4,272,036		4,271,621
	4,272,077	4,272,013	4,272,759	4,271,793	4,272,044		4,271,711
02 :	4,272,208	4,272,014	4,272,768	4,271,875	4,272,051		4,271,766
04 :	4,271,541	4,272,040	4,272,769	4,271,877	4,272,060		4,272,284
	4,271,588	4,272,082	4,272,775	4,271,892	4,272,097	21 : 4,271,657	
	4,271,677	4,272,088	4,272,790	4,271,990	4,272,111		4,271,699
	4,271,712	4,272,093	4,272,796	4,271,998	4,272,140		4,271,861
	4,271,827	4,272,096	4,272,799	4,272,024	4,272,153		4,271,899
	4,271,828	4,272,102	4,272,800	4,272,042	4,272,233		4,272,201
	4,272,128	4,272,109	4,272,811	4,272,220	4,272,250		4,272,204
	4,272,136	4,272,119	4,272,817	4,272,228	4,272,251		4,272,205
	4,272,203	4,272,121	4,272,829	4,272,562	4,272,300		4,272,212
	4,272,218	4,272,148	4,272,835	4,272,565	4,272,453		4,272,262
	4,272,235	4,272,151	08 : 4,271,546	4,272,631	4,272,504		4,272,263
	4,272,339	4,272,158	4,271,605	4,272,646	4,272,528		4,272,813
	4,272,341	4,272,169	4,271,755	4,272,687	4,272,567	22 : 4,272,009	
	4,272,492	4,272,181	4,271,782	4,272,720	4,272,570		4,272,206
	4,272,760	4,272,189	4,271,914	4,272,731	4,272,591		4,272,455
	4,272,764	4,272,190	4,272,113	4,272,753	4,272,626	24 : 4,271,552	
06 :	4,271,539	4,272,195	4,272,127	13 : 4,271,561	4,272,654		4,271,668
	4,271,544	4,272,202	4,272,187	4,271,651	4,272,660		4,271,691
	4,271,545	4,272,241	4,272,294	4,271,688	4,272,667		4,271,706
	4,271,557	4,272,248	4,272,383	4,271,774	4,272,705		4,271,888
	4,271,570	4,272,257	4,272,638	4,272,039	4,272,721		4,272,070
	4,271,584	4,272,268	4,272,679	4,272,126	4,272,746		4,272,141
	4,271,595	4,272,269	4,272,735	4,272,252	4,272,751		4,272,223
	4,271,606	4,272,308	09 : 4,271,674	4,272,299	4,272,810		4,272,302
	4,271,620	4,272,320	4,271,709	4,272,469	18 : 4,271,586		4,272,327
	4,271,642	4,272,345	4,271,786	15 : 4,272,686	4,271,622		4,272,371
	4,271,696	4,272,355	4,271,790	16 : 4,272,021	4,271,663		4,272,398
	4,271,701	4,272,358	4,271,796	4,272,556	4,271,913		4,272,509
	4,271,707	4,272,361	4,271,813	4,272,703	4,272,018		4,272,564
	4,271,719	4,272,372	4,271,859	17 : Re.30,637	4,272,028		4,272,690
	4,271,751	4,272,380	4,271,909	4,271,556	4,272,083		4,272,692
	4,271,756	4,272,387	4,271,924	4,271,576	4,272,199		4,272,713
	4,271,761	4,272,414	4,271,996	4,271,581	4,272,289		4,272,770
	4,271,779	4,272,449	4,272,152	4,271,585	4,272,519		4,272,821
	4,271,787	4,272,461	4,272,249	4,271,611	4,272,541	25 : 4,271,555	
	4,271,791	4,272,471	4,272,273	4,271,626	4,272,544		4,271,593
	4,271,815	4,272,480	4,272,321	4,271,645	4,272,739		4,271,618
	4,271,833	4,272,486	4,272,466	4,271,681	4,272,777		4,271,729
	4,271,839	4,272,488	4,272,561	4,271,693	4,272,785		4,271,732
	4,271,842	4,272,521	4,272,590	4,271,714	19 : 4,271,659		4,271,785
	4,271,876	4,272,545	4,272,648	4,271,723	4,271,661		4,271,843
	4,271,879	4,272,580	4,272,797	4,271,731	4,271,865		4,271,851
	4,271,881	4,272,599	10 : 4,271,900	4,271,741	4,271,910		4,271,955
	4,271,893	4,272,649	4,272,409	4,271,744	4,271,921		4,271,963
	4,271,903	4,272,656	4,272,429	4,271,824	4,272,073		4,272,007
	4,271,915	4,272,658	4,272,608	4,271,904	4,272,131		4,272,078

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46 : 259,505
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55 : 259,468

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06 : 4,739

34 : 4,740

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